This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

NEWCASTLE UPON TYNE

1874.

Presented to

Wm. Smith Esq

9/21

Northumbd. 8 139

NEWCASTLE-UPON-TYNE:

ITS

TRADE AND MANUFACTURES.

BY

B. PLUMMER, JUN.,

SECRETARY OF THE NEWCASTLE AND GATESHEAD CHAMBER OF COMMERCE.

NEWCASTLE-UPON-TYNE:
PUBLISHED BY A. REID, PRINTING COURT BUILDINGS, AKENSIDE HILL.

1874.

NEWCASTLE-UPON-TYNE:
A. REID, PRINTING COURT BUILDINGS, AKENSIDE HILL

26 6 1909
LIBRARY

PREFACE.

THE following pages have been written for the information of the representatives of the Associated Chambers of Commerce, and it is but fair to state that the work involved in many of them has been one of compilation rather than of authorship. The object has been to bring together in a handy form such statistical and other information as will enable the visitor interested in manufacturing or mercantile pursuits to gain, without much trouble, an insight into the present state and recent development of the manufacturing industries and commerce of Newcastle and the immediate locality.

In 1863, a series of papers on the trades of the district was read before the British Association. These papers were subsequently published by Mr. Andrew Reid, who, about the same time, brought out the excellent "Hand-Book to Newcastle" written by Dr. Bruce. As soon as the production of the present volume was determined on, Mr. Reid kindly offered the free use of the copyright and illustrations of these works, together with the copyright of his Map of the Tyne, which has been corrected up to date. Much of the information in the following pages has been derived from these sources—the "Historical Sketch" being chiefly extracts from "Reid's Hand-Book."

The tables shewing the export of coals, coke, and other goods, have been, by permission, compiled from "Browne's Export List."

Acknowledgments are also due to Mr. P. J. Messent, Capt. Pocock, R.N., Mr. John Pattinson, the President of the Sunderland Chamber of Commerce, and the Secretaries of the Hartlepool and Middlesbro' Chambers, for special contributions; also to the government and local officials, as well as to the various manufacturers who have furnished statistical returns.

It is hoped that a perusal of these pages may be the means of bringing the important industries of the locality prominently before the members of the Associated Chambers of Commerce, and of making the visit of the delegates more interesting than it otherwise would have been.

Chamber of Commerce,
Newcastle-on-Tyne, Sept. 14th, 1874.

CONTENTS.

PAGE.
NEWCASTLE-UPON-TYNE 1
Historical Sketch 2
The Castle 7
The Walls 12
St. Nicholas' Church 13
The Old Town 16
Celebrated Men connected with Newcastle ... 23
Modern Newcastle 24
Benevolent and other Institutions 27
The "Wellesley" Training Ship 33

DEVELOPMENT OF THE TOWN AND DISTRICT—

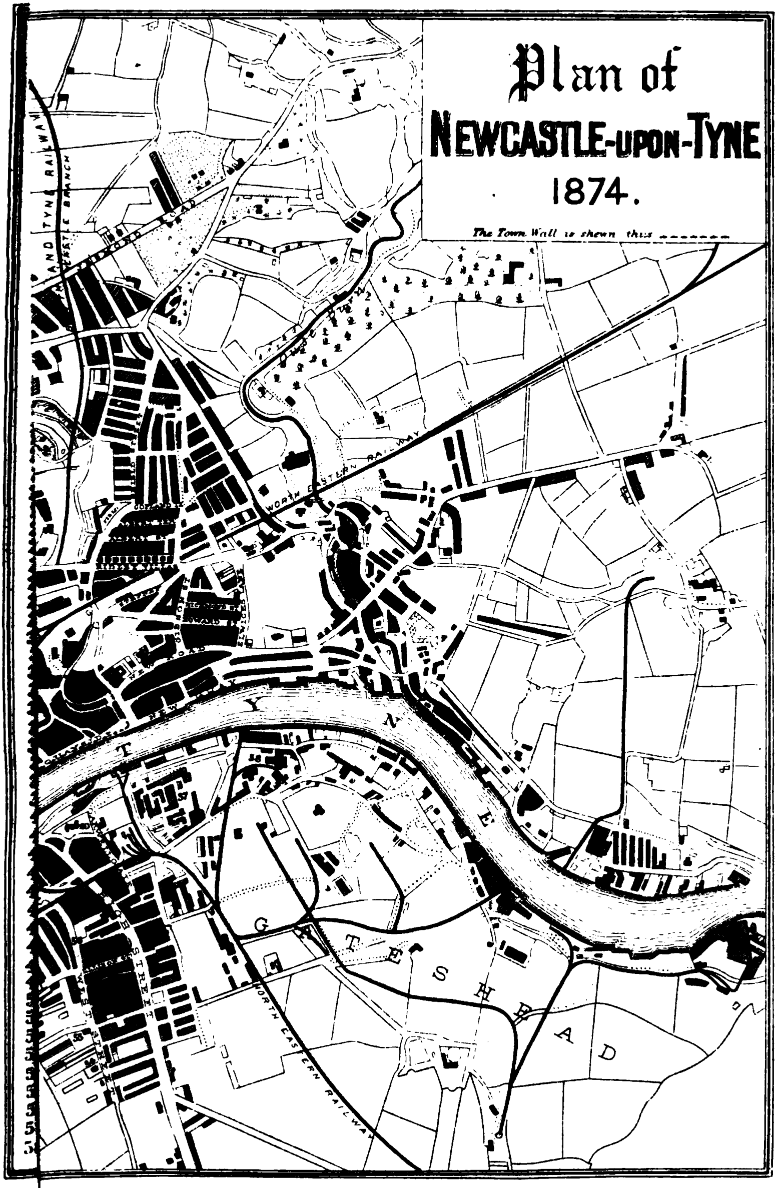
Population, Number of Houses, Rateable Value, &c. 36
Income Tax Returns 37
Population and Rateable Value of Property on the Banks of the Tyne 37
Cattle Market Statistics 38
Post Office do. 38
Telegraph do. 39

DEVELOPMENT OF TRADE—

Customs and Shipping Statistics 40
Value of Imports and Exports 42
Lines of Steamers from the Tyne to other Ports ... 42
Number and Average Size of Vessels frequenting the Tyne 44
Nationality of Vessels employed in the Foreign Coal Trade 45
Comparative Number and Tonnage of Vessels frequenting the Tyne and the chief British Ports ... 46
Development of the Coal Trade of the Tyne ... 46

PAGE

FACILITIES FOR TRADE—
The Newcastle Quay 47
The Tyne Dock 49
The Northumberland Dock 49
The River Improvements 50
Descriptive Account of the Tyne 60
Table of Imports in 1853, 1863, 1872, and 1873 90
Quantities of Coal and Coke exported in 1873 103
Exports other than Coal and Coke in 1873 108
TRADE CHAPTERS—
The Coal Trade (and Miners' Relief Fund) ... 109
Diagram showing Prices of Coal and Coke since 1849 114
The Iron Trade 116
The Engineering Trade 116
The Shipbuilding Trade 117
The Chain and Anchor Trade 119
Lead Mining and Manufacture 119
The Chemical Trade 121
The Copper Trade 125
Fire Clay Manufacture 126
The Cement Trade 127
The Manufacture of Earthenware 128
The Paper Trade 128
NEIGHBOURING PORTS—
Sunderland 132
Seaham Harbour 137
The Hartlepools 138
Middlesbrough 142



Plan of NEWCASTLE-UPON-TYNE 1874.

The Town Wall is shewn thus - - - - - - -

A. Reid, Newcastle on

NEWCASTLE-UPON-TYNE.

Recognising the soundness of Mrs. Glass's recommendation as to the advisability of first catching the hare, it may be well, before sketching the history, or referring to the commerce of Newcastle, to state that the town is situated on the north bank of the Tyne, about eight miles from the sea; its exact geographical position being latitude 54° 58′ 11·6″ N., longitude 1° 36′ 36·5″ W.

The town of Gateshead is situated on the south bank of the Tyne, opposite Newcastle, and, although they are two distinct boroughs, the inhabitants are so closely connected by business and other ties that they form in reality one and the same community.

HISTORICAL SKETCH.

Though various urns and other sepulchral remains, ascribed to the early British period, have been met with in the neighbourhood of Newcastle, nothing is known with certainty as to the existence of any town prior to the Roman era.

In the year A.D. 79, Agricola over-ran with the Roman armies the northern parts of England. In A.D. 120, the Emperor Hadrian visited Britain, and the more effectually to strengthen his hold of the country, he drew a wall from the estuary of the Tyne to the Solway. Hadrian also built a bridge over the Tyne on the site of the one recently pulled down for re-erection. The second station on the line of the wall was planted at Newcastle, and took the name of Pons Ælii, from its vicinity to Hadrian's bridge. Hadrian was of the Ælian family.

Previous to the Saxons replacing the Romans as rulers of the land, the district seems to have been over-run and devastated by the tribes of northern Britain.

A town subsequently sprung up in Saxon times to the eastward of the ruined station of Pons Ælii, bearing the name of Pampedon, or Pandon. It is believed to have been identical with the royal village of Ad Murum, celebrated by Beda as the residence of Oswi, king of Northumbria.

At a later period, a colony of monks took possession of the deserted station of Pons Ælii. The cluster of buildings, which they reared out of the ruins of the Roman settlement, was called Monkchester.

During the Norman era Newcastle rose from its ashes, and obtained the name which it now bears. In order to repress the attacks of the Saxon nobles, who had taken refuge in Scotland, it was necessary to put in repair the Roman bridge over the Tyne, and to defend it. By the direction of the Conqueror, his eldest son, Robert, built a castle here, no doubt on the site of the present structure. It was probably of wood, for it soon disappeared. William Rufus, who must be regarded as the founder of the town, reconstructed the castle of his elder brother. Hardyng, in the following lines, refers to the plans adopted by Rufus to draw a population to his new town :—

> He buylded the Newcastell vpon Tyne,
> The Scottes to gainstand and to defend,
> And dwel therin : the people to incline
> The town to build and wall as did append,
> He gave them ground and gold ful great to spend,
> To buylde it well and wall it all about,
> And fraunchised them to pay a free rent out.

In the reign of Stephen, both Northumberland and Cumberland were held by the Scottish crown. King David, of Scotland, and his son, Henry, were not unfrequently resident in Newcastle.

Henry II. regained possession of the border counties.

The reign of Henry III. was an important one in the history of Newcastle. The coal trade seems then to have sprung into being, or to have obtained a decided impetus. That monarch, "by his letters patents under the great seal of England, dated at Westminster, the first day of December, in the three and twentieth year of his reign, upon the good men of Newcastle's supplication, thought it fit to give them licence to dig coals and stones in the common soil of that town, without the walls thereof, in the place called the Castle-field and the Forth; and from thence to draw and convert them to their own profit, in aid of the said fee-farm rent of £100 per annum, and the same as often as it should seem good unto them; the same to endure during his pleasure."

In this reign the government of the town was vested in a mayor chosen by the burgesses, in lieu of a provost appointed by the crown.

Henry IV. gave Newcastle (though within the county of Northumberland) the privileges of a distinct county, having a sheriff, and magistrates of its own, and rendering its fee-farm rent and other dues direct to the national exchequer.

Under the first three Edwards, Newcastle was the principal rendezvous of the vast armaments which were mustered by these princes for their expeditions into Scotland. The town frequently suffered from the ravages of war and pestilence. Newcastle was in these days the scene of some striking events. Here it was, in 1292, that John

Baliol did homage to Edward I. for the crown of Scotland. In 1305, one of the quarters of Sir William Wallace was here exposed upon a gibbet. Here also, in 1334, Edward Baliol did homage for his crown to Edward III.

The records of the collection of the Poll-tax (1377) show the actual and relative population of all the principal towns in England. Newcastle stands twelfth on the list, the numbers assessed to the tax being 2647; to which the addition of one-third, representing those who were not of taxable age, gives a total population of, say, 4000 souls. By the same computation the population of

London was ...	35,000	Norwich ...	6,000
York ...	11,000	Lincoln ...	5,000
Bristol ...	9,500	Salisbury ...	5,000
Plymouth ...	7,000	Beverley ...	4,000

Newcastle suffered severely during the Civil Wars. The inhabitants strongly espoused the side of the King. In 1640, the Scots' forces, under David Lesley, defeated the Royalist troops at Newburn. The victorious troops entered Newcastle next day, and held it for a year. The effect on trade was most disastrous. "At this time, Newcastle and the coal mines, that had wont to employ ten thousand people all the year long, some working underground, some above, and others upon the water in keels and lighters, now not a man to be seen, not a coal wrought, all absconding, being possessed with a fear that the Scots would give no quarter; four hundred ships using to be there often at a time in the river, not a ship durst come in." The consequence of the suspension of the trade in coal at Newcastle was the rise of some neighbouring ports, which to this day continue powerful rivals to Newcastle.

After the battle of Marston Moor, in 1644, Newcastle —the last bulwark of the royal cause in the North— was closely besieged by the Scotch forces, and eventually taken.

On the 28th of January, 1647, the Scottish army delivered up Charles I. in Newcastle, to commissioners appointed by the Parliament.

In 1715, the attempt to place the old Pretender on the throne of England caused some alarm in Newcastle. The gates were walled up with solid masonry, and a body of 700 volunteers was raised for the defence of the town.

Probably the last occasion on which the walls and gates of the town were made available for defensive purposes was in 1745, when the young Pretender threatened the town. John Wesley, who was here at that time, writes, under date of Sept. 20th:—"The Mayor ordered the townsmen to be under arms, and to mount guard in their turns, over and above the guard of soldiers, a few companies of whom had been drawn into the town on the first alarm. Now also Pilgrim Street Gate was ordered to be walled up." Next day the news of General Cope's defeat reached town, and he writes:—"Orders were now given for the doubling of the guard, and for walling up Pandon and Sallyport Gates." His diary of the 22nd states:—"The walls were mounted with cannon, and all things prepared for sustaining an assault."

OLD NEWCASTLE.

A town that has for many centuries been the seat of a busy population, and has had frequently to stand the brunt of war, cannot be expected to present many relics of remote antiquity. Occasional traces of Roman masonry are met with. Not a relic of the Saxon era survives. Of the Norman, the Castle is a noble specimen.

The Castle.—The Old Castle, though not the largest, is the most complete specimen of a Norman castle existing in England. No remains of the castle built here by Robert, Duke of Normandy, in 1080, or of that subsequently reared by William Rufus, are known to exist. The present building was erected by Henry II. The style of the architecture corresponds with this date, and in the Pipe Rolls for Northumberland, an account is given of large sums expended upon the Castle. From these records it appears certain that the keep was erected between the years 1172 and 1177, at a cost of £892 18s. 9d. At this time, an ox was worth 8s., and a ram 8d.

A Norman castle consisted of a curtain wall, surrounded by a fosse, an outer and an inner bailey, and a keep or dungeon. The area occupied by this Castle was about three acres. The principal entrance was by the gate which is now called the Black Gate.

This gate was erected in the reign of Henry III. The upper stories are more recent.

The only other gateway now remaining, besides the Black Gate, is a small postern on the south side of the

Castle. This postern is probably of the Norman period; in which case it is unique in England.

The keep is a square mass of building, its walls being 17 feet thick in the lower and 14 in the upper parts. To one side of it are attached the stairs of entrance, protected by an auxiliary tower.

The Black Gate.

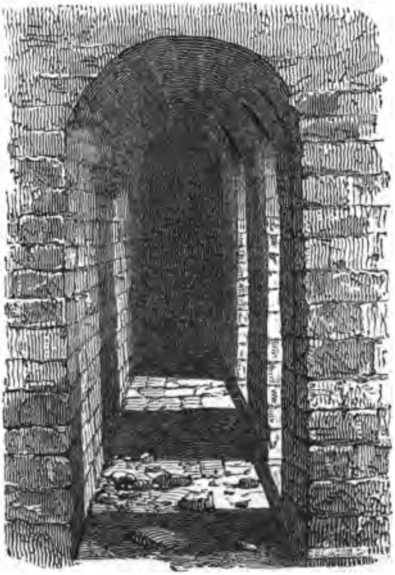
Entering the great gateway, which is of a somewhat ornate character, we are in the great hall of the Castle.

It was probably in this hall that John Baliol, on the 26th Dec., 1292, did homage for the crown of Scotland to Edward I. The rooms in the thickness of the walls at this elevation will attract attention. The principal apartment is called the King's Chamber. In it is an original fire-place.

The King's Chamber.

In a corner, near the entrance to the great hall, is the well-room. The well is 94 feet deep. A pipe from the well-room led down to the lower apartments.

On the way to the battlements, a gallery, running all round the Castle in the thickness of the walls, will be observed.

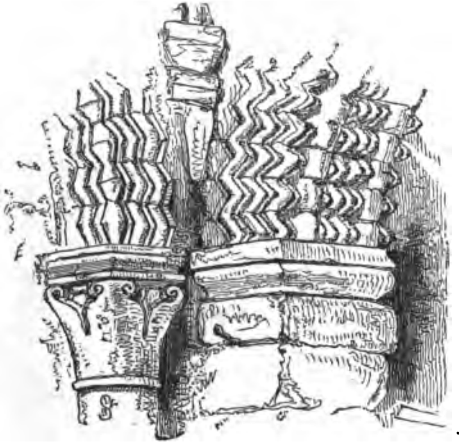


The Gallery.

The battlements of the Castle are modern, and are not in strict keeping with the Norman style of architecture.

The principal apartment is in the second story of the Castle (*i.e.*, below the great hall), and is used as the library and council chamber of the Society of Antiquaries of Newcastle-upon-Tyne, who are now the custodians of the Castle. A narrow angular passage leads from this room to the guard chamber below.

The guard chamber is a spacious and elegant room. A central column, expanding into six ribs, supports the floor above. The column contains in its centre a channel for the passage of water from the well. In this room, during a siege, a great part of the garrison would be lodged. In comparatively recent times it was used as a gaol; the staples and rings to which the prisoners were chained still remain. It was customary to exhibit these unhappy persons on the "Assize Sunday" to curious visitors at 6d. per head.



The Chapel.

Ascending the steps in the window niche of the south wall, we come to another chamber which leads to the sally-port. The arrangements of this part of the Castle will well repay careful study.

Underneath the stairs of entrance is the chapel. It is an exceedingly beautiful specimen of the late Norman style, and is in an unusually good state of preservation.

The museum of the Society of Antiquaries, preserved in the Castle, consists chiefly of Roman altars and sculptured figures found upon the Roman Wall. The president's chair in the library is made of oak, which must be older than the Christian era, it having been taken from beneath the foundations of the Roman Wall. In the chapel are preserved some tombstones from various churches in the town. At one end of it is a wooden coffin, from the vicinity of Featherstone Castle, probably of the ancient British period, and evidently fabricated with stone implements.

The Walls.—From the days of Rufus, the borough appears to have been surrounded by walls. The most important works were effected in the reign of King John, and in the reigns of Edward I. and Edward III. In 1402, nightly watches were kept up upon them by one hundred persons, at the charge of the inhabitants.

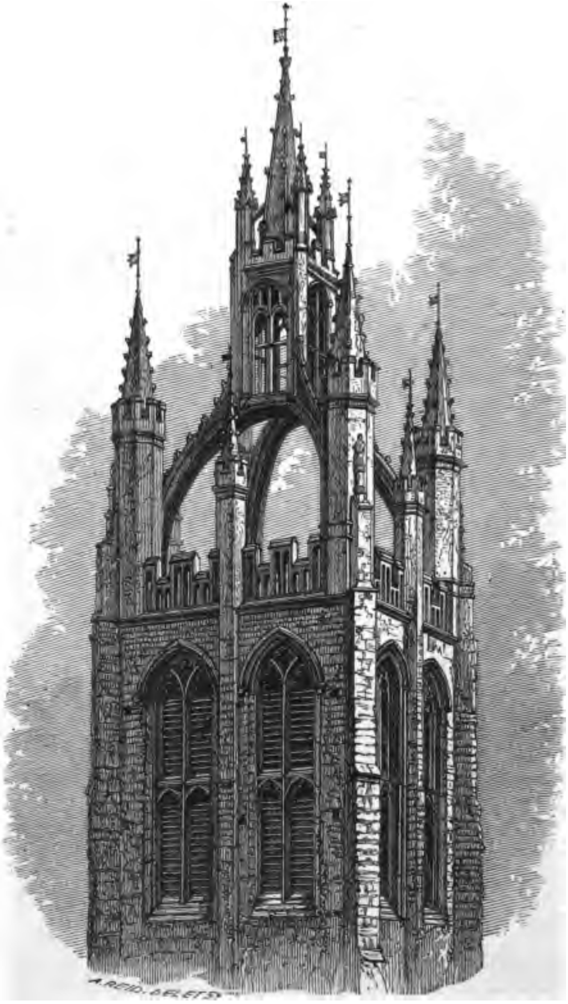
"The strength and magnificens of the waulling of this town," says Leland, in the reign of Henry VIII., "far passith al the waulls of the cities of England and of most of the towns of Europe."

In 1745, the whole circuit of the walls was 2 miles 239 yards. The wall was 8 feet thick and 12 feet high. At its various angles it was strengthened by towers; and at the principal entrances into the town, gateway towers were planted, each of them having gates of oak, ribbed with iron, and a heavy portcullis.

The union of Scotland with England rendered the walls unnecessary.

The Walls, with Mordon Tower.

St. Nicholas' Church.—The early history of St. Nicholas' is hid in obscurity. Probably, shortly after the departure of the Romans, a rude church was erected. The present church, which is mostly of "decorated" character, was finished in 1350. The steeple, manifestly an addition to the original tower, was built by Robert de Rhodes in the reign of Henry VI.


A. REID. DEL. ET SC.

Steeple of St. Nicholas.

Mr. Rickman gives the following account of the church:—"The church of St. Nicholas, at Newcastle, is a large and handsome church, mostly of decorated character, except the steeple, which is of later date. This church is a cross church, but has no tower at the intersection. The steeple is the most beautiful feature of the building, and is a most excellent composition; it is early Perpendicular, not much enriched, but producing a very fine effect. It is the type of which there are various imitations; the best known are St. Giles', Edinburgh; the Church at Linlithgow; the College Tower, at Aberdeen; and its modern imitation, by Sir C. Wren, at St. Dunstan's-in-the-East, London; but all these fall far short of the original. The tower is engaged, and opens to the nave and aisles by beautiful arches; the corners are bold buttresses, crowned by octagonal turrets, with pinnacles; from the base of these turrets spring four flying buttresses, on the intersection of which is placed an elegant lantern, crowned with a spire. The flying buttresses are crocketted, and are peculiarly graceful in their forms. This steeple is as fine a composition as any of its date, and the lightness and boldness of the upper part can hardly be exceeded. The church has some singular and curious portions, and the whole edifice deserves attention."

The full height of the steeple is 193 feet 6 inches; the length of the interior, from east to west, is 245 feet; the full inside width at the transepts is 128 feet 8 inches.

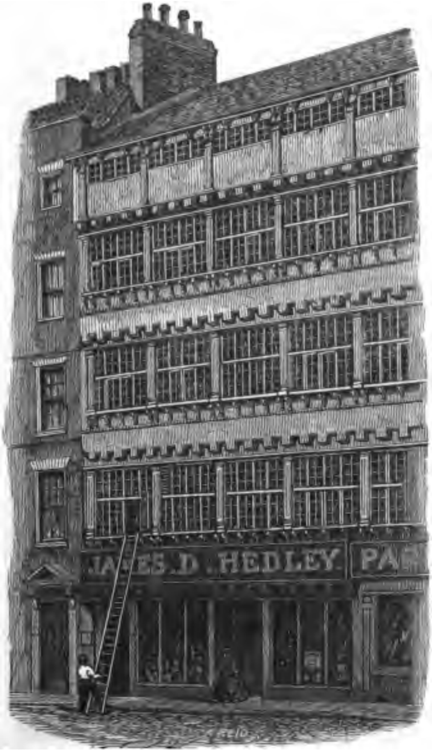
There are now nine bells in all in the steeple. The first is dedicated to St. Nicholas, the second to the Virgin, and the third to St. Michael. The fourth is called the Common or Thief and Reiver bell, in consequence of its being used for the double purpose of summoning the burgesses together for public business, and of informing thieves, and horse, cattle, and sheep stealers, on the eve of the annual fairs, that they are welcome to the town, and that no troublesome questions will be asked. The fifth bell seems to have been cast in 1658; it bears the arms of Newcastle. Other three bells were added in 1717. In 1833, a bell, bequeathed by Major Anderson, and denominated the "Major," was added to the peal. The clock strikes upon the "Major."

The tower and steeple have recently been restored at a cost of upwards of £8,000, and the body of the church is now undergoing a similar operation. It is estimated that to complete this portion of the work about £16,000 will be required. The works are carried out under the superintendence of the eminent architect, Sir Gilbert Scott.

The Town.—The dwelling-houses of the ancient town were peculiar. They were chiefly constructed of timber, the interstices between the beams being filled up with brick, or covered with lath and plaster. As space within the walls was very valuable, the most was made of it, and usually each story of a house projected into the street beyond the one below. Dormer windows and gable ends appeared in the roof. Of these houses there are many exceedingly picturesque examples in the town.

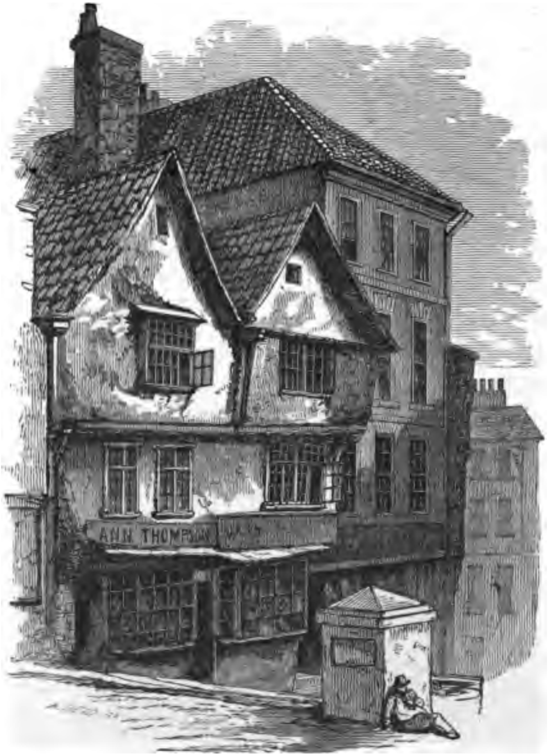
Some of the handsomest of these houses are to be found on the Sandhill, one (at present No. 41) possesses an historical interest. It was occupied in the year 1772 by Aubone Surtees, Esq., the banker, and on the night of the

18th of November, in that year, one Jack Scott (afterwards Lord Eldon) stood gazing up at the house. At length a lady (Bessy Surtees) appeared at one of the windows; a ladder was planted, and the future lord chancellor obtained his bride.



The House of Aubone Surtees, Esq., Banker.

The Guildhall and other public offices occupy the south side of the Sandhill. The origin of this building seems to have been an hospital, called the *Maison de Dieu,* which was founded by Roger Thornton, in the reign of Henry IV.,



Old Houses, Head of the Side.

"for a chaplain, to pray for the soul of the said Roger," and for the sustentation of nine poor men and four poor women.

In 1658 Roger Thornton's building was pulled down and a new one erected. Robert Trollop was the builder of it. The present Guildhall is substantially the same as that which Trollop erected; but its northern and southern fronts have been reconstructed. The Merchants' Court adjoins the Guildhall. Although this part of the building is new, the internal decorations of the court are old. The wood carving by which it is surrounded bears the date of 1636. The principal subjects of its elaborately carved mantelpiece are the Judgment of Solomon and the Miraculous Draught of Fishes. The arms of the governors of the company, since the year 1628, are emblazoned on the sides of the room.

The whole of the ground-floor of this building has recently been thrown into one large room, and is used as an Exchange and Newsroom. Until between two and three years ago, 'Change was held in the open air on the Quayside.

Several conventual establishments existed of old time in Newcastle.

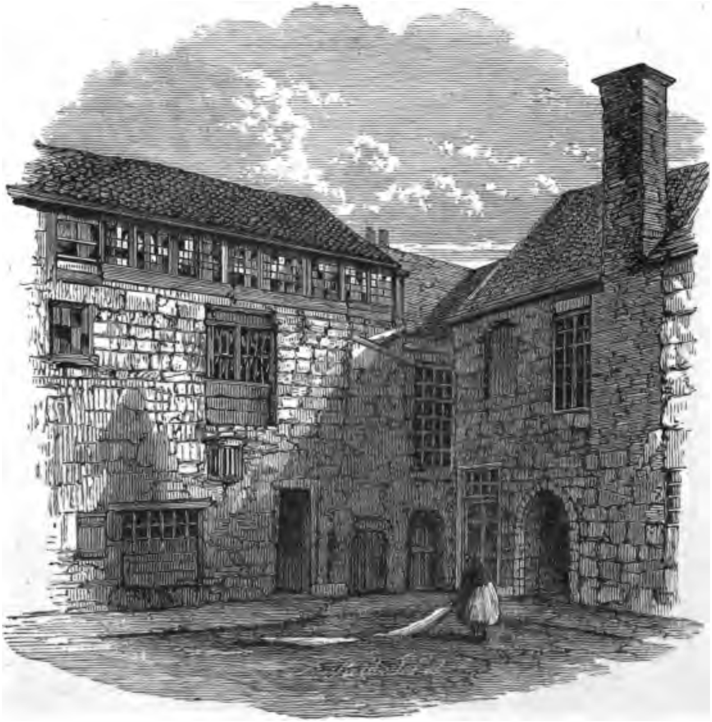
The Nunnery of St. Bartholomew, supposed to have been founded in the reign of William Rufus.

The Hospital of St. Mary the Virgin, founded in the reign of Henry I.

The Hospital of St. Mary Magdalene, also said to be founded in the reign of Henry I.

The House of the Dominicans or Black Friars; date of foundation uncertain, but known to be in existence A.D. 1264.

The Grey Friars or Minors, said to have been founded in the reign of Henry III.



Part of the Quadrangle of the Black Friars.

The White Friars or Carmelites, were first established in the reign of Henry III.

The Austin Friars, and the *Trinitarian or Maturine Friars,* also had houses in the town.

At Jesmond, about a mile from Newcastle, were a chapel and hospital dedicated to Our Lady; Pilgrim Street gained its name from the pilgrims to a holy well near this Hospital leaving and returning to the town by that street.

SOCIAL ASPECT.

One or two glimpses at the town and its social aspect during the last century may not be uninteresting.

A plan, published by Hutton in 1772, shews that about one-third of the space within the walls was occupied by gardens and meadows.

Mr. Wesley makes the following entry in his journal, under the date of June 4th, 1759:—"After preaching, I rode on to Newcastle. Certainly, if I did not believe there was another world, I would spend all my summers here, as I know no place in Great Britain comparable to it for pleasantness. But I seek another country, and therefore am content to be a wanderer upon earth."

The people of former years kept earlier hours than we do. In the Castle, there is a picture of the Sandhill, painted by Mr. Waters about the middle of last century, in which several of the leading characters of the time are introduced. They are represented as abroad, and ready for the business of the day, though by the Exchange clock it is only half-past seven. From this picture we obtain an insight into the manners of the people. Two men, stripped to the waist, are engaged in a regular fight. Near the salmon fish market are some women mauling each other, to the great satisfaction of the onlookers. The gentlemen in the foreground of the picture—the magnates of the town—seem to take all as a matter of course.

Nothing but salt meat was exposed for sale in the butcher market during winter. Poultry, especially geese, were plentiful and cheap; fish was also abundant and cheap. Occasionally we meet in our local records with notices of extraordinary takes of salmon, such as the following:—"July 15, 1771.—Upwards of 4000 salmon were exposed for sale in Newcastle fish market, which sold for about a penny-farthing a pound: 107 salmon were caught that morning at one fishery above Tyne Bridge." It is said that a clause was inserted in the indentures of Newcastle apprentices, bargaining that they should not be fed upon salmon more than three days a week.

John Wesley, in his journal, refers to the state of the lower orders in Newcastle in his day. His first impressions were not favourable:—"Friday, May 28th, 1742.—We came to Newcastle about six; and, after a short refreshment, went into the town. I was surprised: so much drunkenness, cursing, and swearing (even from the mouths of little children), do I never remember to have seen and heard before, in so small a compass of time. Surely this place is ripe for Him who 'came, not to call the righteous, but sinners to repentance.'"

There is another side to this picture—the extreme eagerness of the people to hear his message. "Sunday, 30th May, 1742.—At five, the hill on which I designed to preach (the bank rising from Sandgate) was covered from the top to the bottom. I never saw so large a number of people together, either in Moorfields or at Kennington Common. . . . After preaching, the poor people were ready to tread me under foot, out of pure love and kindness. It was some time before I could possibly get out of the press."

CELEBRATED MEN CONNECTED WITH NEWCASTLE.

John Scotus, or *Duns Scotus.*—Appointed Professor, and taught divinity at Paris, 1304.

House in which Akenside, the Poet, was born.

Nicholas Ridley, Bishop of London. Led to the stake along with Latimer, 1555.

John Horsley, author of "Britannia Romana," born in Newcastle, 1685.

William and Elizabeth Elstob, great Saxon scholars, were born in Newcastle, respectively in 1673 and 1756.

Mark Akenside, author of "The Pleasures of Imagination," born in "Butcher Bank," now Akenside Hill, 1721.

Charles Hutton, the mathematician, born in Newcastle, 1737.

William Scott, Lord Stowell, born 1745.

John Brand, antiquary and historian of Newcastle, born 1743.

John Scott, Lord Eldon, born in Newcastle, 1751.

Cuthbert Collingwood, afterwards Lord Collingwood, born 1750.

Thomas Bewick, the engraver, born at Ovingham, 1753.

Thomas M. Richardson, Sen., the well-known artist, born 1784.

George Stephenson, born at Wylam, 1781.

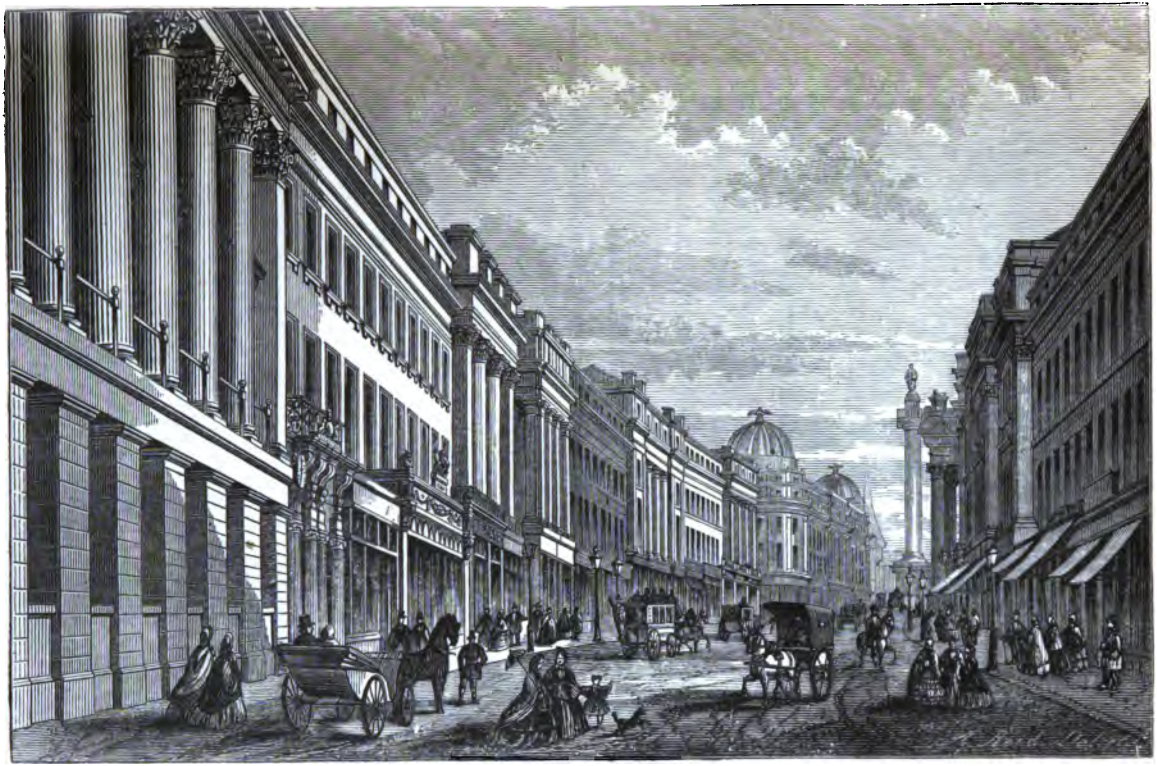
John Martin, artist, born 1787.

Robert Stephenson, born 1803.

MODERN NEWCASTLE.

Any lengthened reference to modern Newcastle is beyond the scope of these pages, particularly as the gentlemen for whose more immediate use they are written will have the opportunity of seeing and judging for themselves. It is hoped that, should the impressions of any visitor be left on record, they may be found hereafter to be not less pleasing with respect to the town, and more satisfactory as regards the culture of its inhabitants, than those of John Wesley already quoted.

The mediæval aspect of Newcastle remained comparatively unchanged until about eighty or ninety years ago, when the ravine to the east of St. Nicholas' Church was partially filled up by the formation of Dean Street and Mosley Street. Previous to this improvement the narrow



General View of Grey Street.

and steep portion of the Side formed part of the "high road" between London and Edinbro', and as such was used by the mail coaches. With the exception of the building of Collingwood Street, little further change was made in the business portion of Newcastle until 1826, when the late Mr. Richard Grainger began those gigantic building operations which, embracing, as they did, the formation of Grey Street, Market Street, Shakespere Street, Hood Street, Grainger Street, Nelson Street, Nun Street, and Clayton Street, together with Eldon Square and Leazes Terrace, completely changed the character of the town.

Grey Street, the principal thoroughfare in the town, is justly considered one of the handsomest streets in the kingdom. The Branch Bank of England forms the chief feature on its west side, the Theatre being the principal object on the east side. The monument erected to the memory of the late Earl Grey occupies a commanding position at the north end.

At the head of Grey Street, and within the triangular block formed by it, in conjunction with Market Street and Grainger Street, a handsome room, commonly known as the Central Exchange, and originally intended as a Corn Exchange, is situated. It is now (under the management of Messrs. Barkas and Tweedy) used as an art gallery and newsroom; it is much frequented, and is well worthy of a visit.

The Butcher and Green Markets, within the rectangular block formed by Grainger Street, Nun Street, Nelson Street, and Clayton Street, will repay inspection.

Railway Works.—Any reference to Modern Newcastle, however short, would necessarily be incomplete without some notice of the railway works, particularly as they embrace the High Level Bridge, one of Robert Stephenson's greatest engineering achievements. The bridge consists of six spans, each formed of four cast iron arches, braced together in pairs, supporting on their upper side the platform carrying the railway, and bearing, suspended beneath, a platform used as a roadway for foot passengers and carriage traffic. The length of the viaduct is 1,337 feet, the breadth of the waterway 512 feet; the railway is 112 feet and the carriageway 85 feet above high water mark. The cost of the bridge proper was £243,096; the cost of other works for carrying the railway through Newcastle was £248,057. These works gave Newcastle the advantage of having all the railway *termini* (with the exception of one local line) centred in one spot, the *Central Station,* which has always held a foremost place in comparison with similar buildings throughout the kingdom.

BENEVOLENT AND OTHER INSTITUTIONS.

The Infirmary, situated immediately to the west of the Central Station, was established in 1751. Newcastle being in the midst of a large manufacturing and mining district, such institutions are, unfortunately, too frequently required, and assume large dimensions. The number of in-door patients received during the year ending March 31st, 1874, was 1673; the number of out-door patients during the same period being 2,128. The total expenditure during the year was £7,753 15s. 9d.

The Prudhoe Memorial Convalescent Home was established in memory of Algernon, Duke of Northumberland, at Whitley in 1867, as an adjunct to the Infirmary. During last year it received 650 patients, the expenditure being £2,475 4s. 7d.

The Hospital for Sick Children.—This charity was founded in 1862, and during the last year it gave accommodation to 101 in-patients, and medical aid to 2,200 out-patients, at a cost of £675 to the institution.

The Dispensary.—The expenditure of this institution during the last year was £1,419 17s. 2d.; and for this sum medical aid was afforded to 13,446 persons, of whom 7,460 were admitted, suffering from casualties and slight cases, without letters of recommendation.

The Northern Counties' Asylum for the Deaf and Dumb was established in 1839, and since 1861 has been located in a handsome building on the Moor Edge to the north of the town. The number of pupils at the termination of the year 1873-4 was 75, who are admitted to the benefits of the institution on the payment of £10 each per annum. The total expenditure for the past financial year was £1,726.

The Royal Victoria Asylum for the Industrious Blind, situated in Northumberland Street, was established in 1838, and has at present 39 inmates, the expenditure during the past year being £1,022.

The Society for the Relief of Widows and Orphans of

Shipwrecked Mariners was established in 1831. During the year 1873, relief was granted to 120 widows and 239 children, at a cost to the society of £1,498 10s. 3d.

The Northern Counties' Orphanage was originally founded as a girls' orphanage in 1864, in premises in Clayton Street. About four years afterwards, Mrs. Abbot built the present Orphanage on the Moor Edge in memory of her husband, the late Mr. J. G. Abbot. On the removal of the girls to the new building, the old premises were used as an orphanage for boys. About £3400 had been collected for the purpose of building a Boys' Orphanage, when Mr. Hilton Philipson offered to complete the building as a memorial of his mother. This building is now being erected at an estimated cost of £10,000. In 1864 the institution began with 10 girls; whereas upwards of 100 boys and girls were provided for in 1873, at a cost of £1,600.

The Ragged and Industrial Schools, established six and twenty years ago, is now an important institution doing a large amount of good. The number of boys on the roll, 31st December, 1873, was 154; the number of girls, 164. The income during the last year was £3,131 3s. 1d., of which £280 13s. 8d. was profit on work done by the pupils.

Industrial Dwellings.—These dwellings, situated at Garth Heads, New Road, are the property of the "Newcastle-upon-Tyne Improved Industrial Dwellings Company Limited," a company formed for the purpose of supplying an improved class of dwellings, suitable for the working classes, at a rental that will allow of a fair return to the investor. It is not stating too much to say that they have fully carried out their programme. By the last annual report the capital actually expended was £5,440. On this capital (after a repayment to the Public Works Loan Commissioners) the company paid 5 per cent. dividend, and carried £43 19s. 2d. forward. The buildings afford accommodation for 43 families.

The Savings' Bank was formed in accordance with resolutions passed at a public meeting on the 21st November, 1817. The Bank was opened on the 10th January, 1818. The following figures shew the great increase in the business:—

Years.	Number of Accounts.	Balance.
1828	4,200	£219,002
1848	9,534	347,365
1868	17,332	568,471
1873	20,444	672,005

The Literary and Philosophical Society was formed on the 24th January, 1793. The present building, standing on the site of the town house of the Earls of Westmoreland, was completed in 1825 at a cost of £16,000. The late Robert Stephenson left the Society a legacy of £10,000, and Sir Wm. G. Armstrong has reconstructed the lecture-room at a cost of £1,500. The annual subscription is £1 1s.; there are at present 1,450 members. The library comprises upwards of 50,000 well-selected volumes.

The Mechanics' Institution was the result of a public meeting held in 1824, and presided over by Mr. George

Stephenson. The library now contains 13,000 volumes, and the number of members is between 1,200 and 1,300.

The Grammar School was founded by Queen Elizabeth. The scheme under which it is managed has, within the last few years, been revised, and the School, after several migrations, located in a new and suitable building at Rye Hill, capable of accommodating about 400 pupils.

The Institute of Mining and Mechanical Engineers, and the College of Physical Science.—The North of England Institute of Mining Engineers was established in 1852. A few years ago it admitted mechanical engineers. The society now numbers upwards of 800 members, and is at present under the presidency of Sir W. G. Armstrong. Mr. Nicholas Wood, the eminent mining engineer, to whose memory the hall, in which the meeting of the Association of Chambers of Commerce will be held, was built, was the first president, and at the first meeting of members alluded to the necessity of establishing a School or College of Science. After one or two futile efforts, the College, so long and so ardently desired by many, became a reality.

The University of Durham College of Physical Science, Newcastle-upon-Tyne, was founded in October 1871, for the teaching of Physical Science, particularly in its practical application to engineering, mining, manufactures, and agriculture, and has hitherto been a brilliant success. Chairs have been established in the following branches of Science:—

1. Pure and Applied Mathematics—Prof. W. S. Aldis, M.A.
2. Chemistry—Prof. A. Friere Marreco, M.A.

3. Physics and Experimental Philosophy—Professor A. S. Herschel, B.A., F.R.A.S.
4. Geology—Prof. David Page, LL.D.
5. Biology.

The following additional classes have also been established:

Latin Greek	Rev. J. Bulman, B.D.
French	M. C. Tiesset, B.A.
German	H. Schümmann, Ph. D., Leipzig.
Mechanical Drawing	Mr. J. A. G. Ross, M.E.

The number of students during last session was 78. The course of study extends over two years, each divided into three terms, called, respectively, the Michaelmas, Epiphany, and Easter terms. The course consists partly of attendance at lectures, and partly of work in the laboratory. Examinations are held at the end of each year. On completing a suitable course of study, and passing the required examinations, students will receive the title of Associate in Physical Science of the University of Durham, and upon certain further conditions the degree of B.A.

Evening classes, conducted by the Professors of the College, have been established, and are open to all persons upon payment of the appointed fees. These classes are intended for those who, from the nature of their daily avocations, are unable to devote other time to study.

The University of Durham makes an annual grant of £1,000, besides some additional payments to extra teachers in languages, and proposes to add a further payment of £150 per annum towards the support of the new Chair of Biology. The amount of donations promised to the

College was about £25,000, the payments extending over a term of six years. Irrespective of these sums, the Duke of Northumberland, the Corporation of Newcastle, and the Ecclesiastical Commissioners, each contribute £100 annually. There are also several other annual subscriptions.

As the College has been expressly established by the aid and for the benefit of the North of England, its constitution has been so framed that the five Northern Counties and their Municipal Corporations shall be represented in its management. A Board of Governors so elected directs the affairs of the College.

Wellesley Training Ship.—The Associated Chambers of Commerce having at various times manifested their interest in training ships, no apology is needed for introducing at length the following paper on the "Wellesley" training ship, drawn up by Captain Pocock, R.N., the commander of the vessel :—

Shortly after the passing of the "Industrial Schools' Act of 1866," Mr. James Hall called a meeting in Newcastle to consider the question of establishing a Training Ship on the Tyne. Such marked success had rewarded the managers of ships for the reformation of convicted criminals, that there was no difficulty in enlisting the sympathies of the public in a scheme for making sailors out of lads who were not yet criminal, but likely to become so. £3,000 was subscribed on the spot, and the Admiralty was applied to for the loan of a ship. Their lordships offered the "Diana," 42 gun frigate, but the School Ship Society of London, after ten years work, having obtained a larger ship to replace the "Cornwall," 50 gun frigate, the Committee succeeded in getting the reversion of that vessel on very advantageous terms. In July, 1868, she was named the "Wellesley," and inaugurated as the Tyne Training Ship, by his Grace the Duke of Northumberland.

In 1873 the "Wellesley" was overcrowded with 250 boys on board, and there being a demand for trained lads far exceeding the supply, the Committee were obliged to follow the precedent of the London Society and apply for a larger ship. The Admiralty replied that no line of battle ship could be spared, but at last granted the loan of the "Boscawen," on account of her being partially rotten. This ship, now called the "Wellesley," has been fitted out at a cost of about £3,500, a considerable portion of which has been spent in removing the infected portion of her timbers. The system of ventilation, devised by Mr. John Glover, is a novelty on board a training ship—instead of heating the vitiated air by means of hot water pipes, the air is drawn in from the outside, warmed, and distributed over the ship.

The material the Committee have had to deal with has been of the roughest and most unpromising kind. The numbers discharged on account of disease show that no selection has been made—they have never refused a boy. The results are, therefore, the more satisfactory.

The boys receive a practical education in school in the six standards approved by the Government code, with history, geography, &c. They cook the food, make all the clothing and boots, make and repair sails, mats, rope, &c., &c.; are exercised at sail drill, company and battalion manœuvres, single stick, and dumb bell exercise, to which rifle drill is to be added. Their whole life, on board and in the boats, is a training for sea. Shortly before their time is up, they go to regular seamanship instruction—comprising knotting and splicing hemp and wire rope in all its branches, compass and rule of the road at sea, lead and log line, rocket practice, &c., &c.

When a boy's time is up, he generally ships as ordinary seaman, at 30 shillings a month, his outfit being provided by himself, for every facility is given to enable the boys to earn money to provide for their start in life; thus, some accumulate upwards of £5, others 5s. Many lads who have left the ship are now in receipt of upwards of £4 a month.

From July, 1868, to the present time, 505 boys have been received from the undermentioned places :—

Newcastle	142	Sunderland	31
North Shields	112	London	86
South Shields	69	Other places	38
Gateshead	27		
		Total	505

There were 272 on board in July, 1874. Of the 233 discharged, 18 have left on account of disease, 3 absconded, 3 transferred to other schools, 9 died, 5 sent to reformatories, and 11 returned to friends. Of the remaining 184, nearly all have gone to sea, and the rest have been provided with situations on shore—the latter, almost invariably, are prevented going to sea by their relations, and, as frequently, go to sea a few months after leaving.

The results are on the whole most satisfactory, and if the boys were only up to their age in size and weight, would be still more so. Some ships take them voyage after voyage; sometimes they ship as able seamen on their second voyage.

The "Wellesley" and her sister training ships claim to be in a fair way towards solving some of the gravest difficulties of the time. By taking the children of the very lowest strata of society away from their evil associations, they cut off the supply of criminals from the gaols and paupers from the workhouses. They save the lives of hundreds of children; they clothe, feed, and educate, and then turn them out into the mercantile marine with a technical training to be got, nowadays, nowhere else but in a training ship.

Development of the Town and District.

The following statistics illustrate the development of the Towns of Newcastle and Gateshead:—

Population.

	1377.	1801.	1821.	1841.	1861.	1871.	1873.
Newcastle	4,000	28,366	35,181	69,430	109,108	128,443	133,246
Gateshead		8,597	11,767	19,846	33,587	48,627	54,069

Number of Houses.

	1772.	1831.	1862.	1873.
Newcastle	2,450	5,048	13,000	17,581
Gateshead	550	2,317	4,700	7,085

Rateable Value of Property.

	1851.	1861.	1871.	1873.
Newcastle	£175,814	£316,632	£448,156	£506,958
Gateshead	£49,570	£62,790	£129,080	£162,697

The annual value of real property assessed in 1815 was, for Newcastle, £91,640; for Gateshead, £25,202.

The Income Tax has more recently been assessed on the following amounts:—

SCHEDULE.	NEWCASTLE, For the Year ending April.		GATESHEAD.
	1862.	1874.	1874.
	£	£	£
A	455,330	551,503	165,278
D	615,208	1,911,097	262,907
E	......	75,847	17,102

The number of people seen moving in the streets of Newcastle is frequently a matter of surprise to strangers visiting the town, but admits of easy explanation when it is remembered that Newcastle is the business centre of a large population lying beyond the boundaries of the borough. Without referring to more remote distances, the following statement, shewing the present and past population and rateable value on both banks of the river from Newcastle to the sea, inclusive of the Boroughs of North and South Shields, will illustrate this point more clearly:—

ON THE NORTH BANK OF THE TYNE.

DISTRICT.	RATEABLE VALUE.				POPULATION.			
	1851. £	1861. £	1871. £	1873. £	1851.	1861.	1871.	1873.
Walker	..	12,883	28,181	29,879	3,963	6,473	8,856	10,000
Wallsend	..	7,345	10,870	14,822	2,161	2,371	4,169	7,000
Willington Quay	..	4,388	10,359	11,635	2,284	3,031	5,152	7,000
Howdon	..	1,463	1,799	2,000	1,276	1,313	1,665	
North Shields ..	57,747	95,223	113,312	129,009	29,170	34,021	38,941	40,381
Total	57,747	111,302	164,521	187,345	38,854	47,209	58,783	64,381

ON THE SOUTH BANK OF THE TYNE.

DISTRICT.	RATEABLE VALUE.				POPULATION.			
	1851. £	1861. £	1871. £	1873. £	1851.	1861.	1871.	1873.
Felling	10,000	14,000	16,400	23,000	7,000	10,000	13,000	15,000
Bill Quay	3,000	6,000	13,500	25,000				
Hebburn	3,457	6,133	19,123	32,778	3,835	6,494	6,187	10,000
Jarrow	4,635	9,400	37,935	51,941			18,099	22,000
South Shields ..	41,793	70,114	124,535	146,068	28,293	35,239	45,336	48,000
Total	62,885	105,647	211,493	248,787	39,128	51,733	82,622	95,000

As the inadequate supply of fresh meat a century ago has been referred to, the following return shewing the increasing importance of the Newcastle Cattle Market may not be out of place:—

Year.	Fat Cattle.	Sheep and Lambs.	Swine.
1842	5,974	117,010	12,360
1852	38,109	250,369	15,504
1862	54,936	286,110	34,544
1872	73,473	316,525	41,966
1873	78,604	347,232	37,734

The Post Office statistics are interesting as a means of showing the development of a community. The Newcastle establishment comprised—

In 1831 ... 3 Clerks and 4 Letter Carriers.
1839 ... 5 Clerks and 7 Letter Carriers.
1863 ... 16 Clerks and 23 Letter Carriers.
1873 ... 25 Clerks, 9 Boy Sorters, 31 Letter Carriers, and 18 Assistant do.

The number of letters, book packets, and newspapers delivered in Newcastle

In April 1856, was	66,273
In April 1863, was	88,762

For the whole of 1873 the numbers were as follows :—

	Letters.	Newspapers, Book Packets, Circulars, &c.	Post Cards.
Delivered	8,128,952	2,436,824	667,420
Received	10,839,400	3,091,292	847,808

MONEY ORDERS.

	PAID.	£	s.	d.	ISSUED.	£	s.	d.
1862	45,909 =	102,944	1	8	51,918 =	118,875	10	4
1873	84,653 =	175,014	8	2	88,131 =	178,971	0	4

The number of letters registered was :—1856, 9,353 ; 1862, 11,378 ; 1873, 28,371.

For the last six months of 1870, before the Post Office acquired the telegraphs, the number of messages was :—

Sent from Newcastle	28,171
Received at Newcastle	53,363

The staff consisted of 43 Clerks.

In the year 1873, the number of messages was :—

Inland—Sent from Newcastle	157,452
Do. Received at Newcastle	404,316
Foreign—Sent from Newcastle	39,728
Do. Received at Newcastle	23,400

The staff consisted of 133 Clerks, 97 Messengers, and 2 Messenger Inspectors.

Development of Trade.

Custom House and Shipping Statistics.—The following Statistics show the development of the trade of the Tyne :—

FOREIGN TRADE INWARDS WITH CARGOES.

	1843.*	1853.†	1863.†		1873.	
	Ves.	Ves.	Ves.	Ton.	Ves.	Ton.
Newcastle...........	708	863	1477	260,587	2687	667,303
No. Shields	...	89	280	62,857	162	39,249
So. Shields					277	106,234
Total	708	952	1757	323,444	3126	812,786

FOREIGN TRADE OUTWARDS WITH CARGOES.

	1843.*	1853.†	1863.†		1873.	
	Ves.	Ves.	Ves.	Ton.	Ves.	Ton.
Newcastle...........	4088	5459	8074	1,467,630	7476	2,368,224
No. Shields	...	1074	1066	226,965	1209	307,955
So. Shields					173	84,001
Total	4088	6533	9140	1.694,595	8858	2,760,180

COASTING TRADE INWARDS WITH CARGOES.

	1843.*	1853.†	1863.†		1873.	
	Ves.	Ves.	Ves.	Ton.	Ves.	Ton.
Newcastle...........	2513	2531	2565	325,127	3692	653,778
No. Shields	...	676	597	86,481		
So. Shields						
Total	2513	3207	3162	411,608	3692	653,778

---

* In 1843 the whole of the River Tyne and the ports of Blyth and Amble were within the jurisdiction of the Newcastle Custom House.

† In 1853 and 1863 the Returns for North Shields include those for South Shields, Blyth, and Amble; the Returns for the two latter places are also included in the North Shields return for 1873.

COASTING TRADE OUTWARDS WITH CARGOES.

	1843.*	1853.†	1863.†		1873.	
	Ves.	Ves.	Ves.	Ton.	Ves.	Ton.
Newcastle............	13633	11,601	10,195	1,607,595	7074	1.595,225
No. Shields ...... So. Shields	...	1245	875	93,941		
Total	13633	12,846	11,070	1,701,536	7074	1,595,225

VESSELS REGISTERED AS BELONGING TO THE PORT.

	1843.*		1863.†		1873.	
	Ves.	Ton.	Ves.	Ton.	Ves.	Ton.
Newcastle	1379	277,771	608	102,280	505	155,756
North Shields	...	......	1125	270,930	574	164,237
South Shields					239	88,874
Total	1379	277,771	1733	37,3210	1318	408,867

GROSS AMOUNT OF CUSTOMS REVENUE.

	1843.*	1853†.	1863.†	1873.
Newcastle	£494,061	£348,421	£243,003	£442,371
North Shields......	......	74,688	41,292	43,037
South Shields ...				18,689
	£494,061	£423,109	£284,295	£503,797

---

* In 1843 the whole of the River Tyne and the ports of Blyth and Amble were within the jurisdiction of the Newcastle Custom House.

† In 1853 and 1863 the Returns for North Shields include those for South Shields, Blyth, and Amble; the Returns for the two latter places are also included in the North Shields return for 1873.

The following return, representing the declared values of goods, other than coals and coke, exported from the Tyne, shows the rapid development of the general export business :—

	1864.	1870.	1871.	1872.	1873.
N'castle ..	£778,472	£2,150,748	£2,765,626	£3,055,357	£3,151,701
N. Shields	3,076	10,684	10,750	50,934	64,658
S. Shields	40	102,195	56,111	28,153	29,593
Totals...	£781,588	£2,263,627	£2,822,487	£3,134,444	£3,215,952

The declared value of the imports was as follows :—

	1872.	1873.
Newcastle....................	£3,992,017	£5,018,926
North Shields	211,883	168,830
South Shields	769,293	576,856
	£4,973,193	£5,764,612

To accommodate the increasing import and export trade, coastwise and to foreign ports, regular lines of steamers have been established between the Tyne and the following ports :—*Coastwise*—London, Ipswich, Lynn, Yarmouth, Hull, Leith, Grangemouth, Dundee, Aberdeen, and Kirkcaldy. *Foreign*—Stettin, Copenhagen, Aarhuus, Nakskoff, Gothenburg, Drontheim, Haarlingen, Amsterdam, Stockholm, Antwerp, Rotterdam, Hamburg, Leghorn, Naples, Lisbon, and New York, *via* Bergen. In addition to these regular lines, steamers are placed on the berths, as trade and the season permit, for St. Petersburg, Cronstadt, Riga, Memel, Dantzic, Christiania, Dunkirk, Havre, Bordeaux, Alexandria, Montreal, and other ports.

Looking at the number of vessels shown by the above statistics, as employed in the import and export trade, no great development appears to exist, excepting in the foreign trades inward. An actual falling off has taken place in the number of vessels outwards with cargo coastwise; it should not, however, be forgotten that, during the period over which the statistics extend, the average size of the vessels employed has very materially increased. The following table, published by the River Tyne Commissioners, not only shows the number of vessels frequenting the Tyne in each year, but also the number between each hundred tons register of size, as well as the average size of the whole during each year :—

CLASSIFICATION OF VESSELS CLEARED OUTWARDS FROM THE RIVER TYNE DURING THE YEARS 1863, 1864, 1865, 1866, 1867, 1868, 1869, 1870, 1871, 1872, AND 1873, SHOWING THE NUMBER OF VESSELS OF OVER 1000 TONS REGISTER, AND THE NUMBER BETWEEN EACH HUNDRED, DOWN TO 100 TONS AND UNDER.

Classification of Registered Tonnage.	YEARS.										
	1863.	1864.	1865.	1866.	1867.	1868.	1869.	1870.	1871.	1872.	1873.
Above 1000 tons register	19	43	72	58	108	77	100	162	232	232	196
„ 900 „ and under 1000	16	14	22	29	35	28	35	48	62	77	83
„ 800 „ „ 900	110	85	89	83	102	114	109	155	192	177	176
„ 700 „ „ 800	36	95	81	123	143	147	127	211	273	241	294
„ 600 „ „ 700	58	79	94	122	109	130	206	327	410	594	531
„ 500 „ „ 600	183	659	1153	1284	1256	1105	1195	1303	1373	1263	1377
„ 400 „ „ 500	500	788	855	1039	1167	1105	1275	1528	1656	1584	1513
„ 300 „ „ 400	977	967	1119	1219	1198	1170	1228	1150	1218	1264	1219
„ 200 „ „ 300	3646	3292	3768	3517	3448	3353	3172	3113	3080	2781	2525
„ 100 „ „ 200	7136	6851	7046	7007	6721	6686	6141	6244	6227	5644	5498
Under 100 „	6177	5537	5364	4935	4662	4995	4840	4861	4233	3810	3387
Total Number of Vessels ...	18858	18410	19663	19416	18949	18910	18428	19102	18956	17667	16799
Average Size of Vessels ...	170½	190	205½	214½	222½	215½	226	239	258	267	274

N.B.—In 1854 the average size of vessels was 149½ tons.

It will be seen that between the years 1854 and 1873 the average size has increased from 149½ tons to 274.

The following statement shows the number of vessels belonging to each country engaged in the oversea coal trade, sailing from the Tyne during the year, 1873 :—

American	17
Austrian	84
British	3.846
Belgian	26
Brazilian	3
Danish	580
Dutch	185
French	127
Greek	30
Carried forward	4,898
Brought forward	4,898
German	850
Italian	228
Norwegian	642
Portuguese	5
Russian	101
Spanish	9
Swedish	385
Turkish	1
	7,119

The tables, compiled by the River Tyne Commissioners, show that 12,808 British vessels, representing a register tonnage of 3,642,528 tons, and 3,991 Foreign vessels, representing a tonnage of 968,830 tons, paid pier dues in 1873.

The number of vessels frequenting the river has already been shown. It will be observed by the following returns for 1872, of the number and tonnage of vessels cleared from the principal ports in the kingdom, that the Tyne stands second in the list, both with respect to the number of vessels and tonnage, Liverpool being first as to tonnage, London as to the number of vessels; whereas previous to the date of these returns, the Tyne had always stood first as to the number of vessels cleared :—

	No. of Vessels.	Tonnage.	No. of Vessels.	Tonnage.
Liverpool... ...			13,377	5,525,611
Tyne Ports—				
Newcastle ...	15,504	4,148,191		
North Shields ...	1,661	383,064		
South Shields ...	373	144,280		
			17,538	4,675,535
London			18,575	4,618,506
Sunderland			9,466	2,069,048
Cardiff			11,817	2,546,525
Glasgow			6,193	1,643,188
Hull			4,901	1,397,982

COAL TRADE OF THE TYNE.

The quantity of coal vended from the Tyne during various years was as follows :—

Year.	Foreign.	Coastwise.	Total.
1602	—	—	190,600
1630	36,542	253,380	289,922
1710	—	—	475,000
1791	121,123	1,071,572	1,192,695
1811	47,578	1,678,401	1,725,979
1831	161,247	2,047,617	2,208,864
1851	1,268,336	2,281,941	3,550,277
1861	2,365,006	2,446,136	4,811,142
1871	3,587,771	2,447,544	6,035,315
1873—			
Newcastle	3,113,250	2,240,348	
No. Shields	151,168	13,333	
So. Shields	141,472	169,569	
	3,405,890	2,423,250	5,829,140

In 1873 the export of coke from the Tyne was—

Foreign .... 144,001 tons,
Coastwise ...... 14,670 „ = 158,671 tons,

Making a total export of coal and coke of 5,987,811 tons.

Tables shewing the quantities of each of the principal articles imported in 1853, 1863, 1872, and 1873; the quantities of coals exported in 1873 to various ports and countries, and the quantities of other goods exported to each country, will be found at subsequent pages.

FACILITIES FOR TRADE.

In former times, the river in its natural state afforded sufficient accommodation for the trade then carried on; but, as business increased, facilities had to be provided for its accommodation. These consist of

The Corporation Quay at Newcastle;
The Tyne Dock, belonging to the North-Eastern Railway Company;
The Northumberland Dock, belonging to the River Tyne Commissioners;
The Deep Water Shipping Staithes at White Hill Point, also belonging to the River Tyne Commissioners;
A General Scheme of River Improvement.

Newcastle Quay.—The Corporation have recently extended the Quay eastward to the Ouseburn, and the entire length of the quay from this point to the High Level Bridge is now above 1500 yards. A branch from the North Eastern Railway has recently been brought on to the Quay, extending along a considerable portion of its length. There are several cranes placed on the Quay, to assist in the loading and discharging of cargoes; one capable of lifting 60 tons, is chiefly used for putting machinery into steamships; this, however, has been found insufficient, and another is now being erected capable of lifting 80 tons. The new portion of the quay will be fitted up with sheds, hydraulic machinery, and all modern appliances for facilitating the import and export trade.

The River Tyne Commissioners' proposal to deepen the river to 22 feet water at low tide has necessitated the rebuilding of the entire Quay on principles that will admit of deep dredging alongside. The foundation of that portion of the Quay already re-constructed, is formed of metal cylinders, sunk in pairs, one behind the other, to the depth of 45 feet below low water mark, each pair of cylinders being at a distance of 25 feet along the length of the quay. The corresponding cylinders in the two rows are united together by a heavy beam; arches, springing from beam to beam, carry the superincumbent quay wall. The bank within the spaces between the cylinders, is sustained by cast-iron sheet piles, driven in the form of a segment of a circle, springing from the front cylinders, and having its convex side towards the land.

With a view of giving greater stability to the quay, it has been determined to reduce the spaces between each pair of cylinders, substituting an elliptical cylinder for the sheet piling.

A public company is now being formed for the purpose of erecting large grain and general warehouses on the Quay, to be fitted with the most complete hydraulic machinery and elevators for the direct and rapid discharge of vessels. The warehouse will be capable of holding

100,000 quarters of grain and a large quantity of other merchandise.

The Tyne Dock, situated on the south side of the river, immediately to the west of the Borough of South Shields, has an area of 50 acres of water, and a tidal basin of 10 acres. The depth of water over the dock sills at ordinary spring tide is 24 feet 6 inches; the width of the entrance of the east lock is 60 feet, and the width of the entrance of the west lock is 80 feet. In 1873, there were shipped at this dock 2,714,366 tons of coal and coke, and 51,556 tons of goods. The following were the principal imports:—

Esparto	35,405	tons.
Grain	18,639	„
Peruvian Guano	3,440	„
Timber and Wood Goods	180,074	„
Iron Ore	121,490	„
Swedish Iron	17,242	„

The North Eastern Railway Company have obtained Parliamentary powers to considerably extend the accommodation at Tyne Dock, and intend commencing as soon as the preliminary details can be arranged.

The Northumberland Dock.—The Northumberland Dock is used almost exclusively for the shipment of steam coals from the Hartley district. It is, in reality, an enclosure of a portion of the river, the shipping staiths having existed very much in their present condition previous to the formation of the dock. The dock has an area of 55 acres, with a tidal basin of 2 acres. There are two sets of gates—one, through the tidal basin, 70 feet wide, and the other, through the lock, 52 feet wide. The depth of water on the dock sills at ordinary spring tides is 24 feet. The quantity of coal shipped in this dock during the year 1873 was—for export 2,319,931 tons, and for river sale 309,223 tons; total, 2,629,154 tons.

The Whitehill Point Staiths.—These staiths are situated immediately to the eastward of the Northumberland Dock, and have only recently been brought into use. Deep water having been made from the sea upwards past the staiths, the object of their formation is to enable steamers entering the Tyne to proceed at once to the staiths, load afloat as rapidly as possible, and proceed to sea again without the detention caused by waiting for the opening of the dock gates at tide time.

River Improvements.—Statement of Works. By P. J. Messent, C.E.—Previous to the year 1850, the works of improvement had been confined chiefly to groynes and training walls advanced into the river (behind which land was reclaimed), and a comparatively small amount of dredging.

The state of the river for navigation may be briefly described as follows, beginning at the mouth or entrance:—

Here there was a bar, having a depth of water of about six feet at low water spring tides, which gave a depth of about 21 feet at high water spring tides, and about 17 feet at high water neap tides. The bar or diminished depth of water extended 800 feet from west to east, and the width of channel over it was about 600 feet.

No vessel drawing much more than 20 feet of water could therefore enter or leave the Tyne even at spring tides, and whenever an east wind occurred the available depth was diminished according to the height of the sea waves. Vessels drawing between 17 and 18 feet water have been detained two or three months after they were loaded on account of a succession of east winds occurring on the days of the high spring tides.

About 1,100 yards above the outer bar was an inner bar, called the nine feet bar, and stones. About 400 yards above the nine feet bar the channel was abruptly reduced in width to 400 feet opposite the Low Light House, the contracted channel being called the Narrows.

Shields Harbour, which commences above the Narrows and extends to the high end of South Shields, opposite Whitehill Point, about a mile and a half, consisted of a comparatively narrow, tortuous, deep water channel, with large shoals dry at low water, some of which, the in-sand and middle ground on the south, and the Dortwick Sands on the north side of the harbour, extended from the shores to and beyond the middle of the river. It required very careful navigation to take a laden vessel out of Shields Harbour at high water (the only time possible) and keep clear of the shoals.

The river from Shields Harbour to Newcastle was then a series of shoals, with a narrow and generally serpentine channel between and past them, through which vessels of about 15 feet draught could get up at high water spring tides, whilst at low water it was not an uncommon occurrence for small river steamers, drawing between three and four feet of water to be aground in their passage between Shields and Newcastle, for two or three hours for want of depth of water.

Above Newcastle the river was navigable for keels and small craft alone, and this only at the time of high water.

The first important work undertaken by the Tyne Improvement Commissioners, in 1853, was the construction of the Northumberland Dock, in a bight of the river above Hayhole Point, and about three miles from the bar. This work, constructed under the superintendence of the late Mr Plews, consisted of enclosing a portion of the river where most of the coals from the Northumberland coal fields were shipped, and was accomplished without stopping the traffic. The entrance lock and basin were completed below the staiths, and the dam or embankment outside of them, whilst the west end was left open for the passage of vessels to and from the shipping staiths until the east entrances (lock and basin) were completed and available for the passage of vessels when the west end was closed.

The dock has 55 acres of water space, and will accommodate 200 vessels. The depth of water on the sill is 24 feet at high water spring tides, and 20 feet at high water neap tides. It was commenced in 1853, and opened in October 1857.

In 1856, the piers at each side of the entrance to the river, designed by the late Mr. Walker for the protection of vessels from the prevalent and destructive gales from north-east to south-east, and for facilitating the removal of the bar were commenced. They are formed, each of a base of rubble stone, deposited by barges, and a superstructure of concrete and built stonework, the lower and larger portions of which, commencing at 21 feet below low water, are fixed by divers. The length of the superstructure of the north pier completed, is 2,250 feet, beyond which the submerged base extends 450 feet. The length of the superstructure of the south pier completed, is 4,000 feet, the submerged base being 1,100 feet in advance.

Upwards of 2,500,000 tons of stone, exclusive of lime and cement, have, to the present time, been used in these works, the construction of which, from their exposed position and frequent interruptions by rough seas, is attended with great difficulty.

In 1859, Mr. J. F. Ure was appointed River Engineer, and he shortly afterwards inaugurated a comprehensive scheme for the improvement of the whole of the navigable portion of the river, extending from the bar to Wylam, a distance of 19¼ miles, adopting as part of the scheme the piers then in progress.

In 1861, the Commissioners obtained Parliamentary power to carry out the improvement recommended by Mr. Ure. The following is the result of the work done since the Parliamentary sanction was obtained :—

At the mouth of the river the bar has been removed, and where there was formerly only a depth of six feet at low water there is now more than 20 feet, which depth is maintained for a considerable width into the harbour. The obstructive Narrows have been widened from 400 feet to 640 feet.

In Shields Harbour the dangerous shoals, the in-sand, middle ground, and Dortwick Sands have been removed, and for a length of 8,000 feet vessels can moor in a depth of more than 30 feet at low water spring tides; whilst instead of the tortuous channel above described, through which it was formerly difficult to navigate one vessel at high water, three or four may now safely be towed abreast through the harbour at any time of tide, and vessels that were formerly detained for months before being enabled to cross the bar in safety at high water can now leave in any weather that it is fit to go to sea in, at or within a short time of low water.

Between Shields Harbour and Newcastle, where river steamers drawing three or four feet water used to ground for hours, there is now a depth of above 19 feet at low water spring tides for the whole distance.

The deepening has been continued above Newcastle for about a mile and a half, with a depth of 17 feet at low water spring tides.

Two powerful dredgers are at work continuing this depth upwards; another dredger is at work near Blaydon, making a depth of 12 feet at low water.

The length of the river deepened as above, below Newcastle Bridge to the outside of the former site of the bar is about 10½ miles, the length above Newcastle Bridge which is in course of deepening, including the 1½ miles already deepened, being 8¾ miles.

These changes and improvements have been chiefly effected by dredging, the plant used being most extensive and powerful, consisting of six dredgers (of which three have engines of 55 horse-power), ten steam hoppers, forty wooden hoppers with no steam power, eight steam tugs, together with keels, boats, &c.

The cost of the dredging plant, with the cost of the shops, slips, &c., established at Howdon for repairing the same, amounted to £300,000.

The quantity of material dredged from the bed of the river since 1860 is 48,000,000 tons, more than 5,000,000 tons having been dredged in one year.

The dredged material (except in the case of that one dredger near Blaydon, where it is spread on land) is taken out to sea in the hoppers and deposited between two and three miles from the entrance of the river in a depth of water exceeding 20 fathoms at low water.

The commercial effect of these extensive river improvements is indicated in the increased size of vessels frequenting the port; for whilst in 1854 the average tonnage of all the vessels using the river was 149 tons, in 1873 it was 274 tons; and the number of vessels above 500 tons register, which was 422 in 1863, was last year 2,657—a considerable number being large vessels of over 2,000 tons register, a size unknown in the river until after 1863.

Other important works are in progress, and mostly in a forward state.

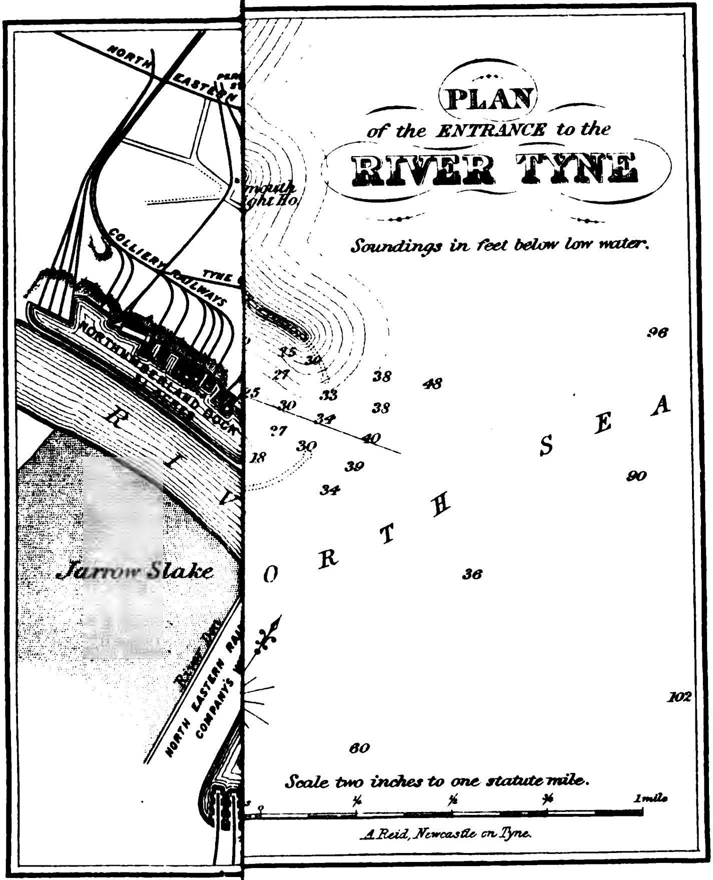
In the upper part of the river a new cut, 400 feet wide, has been made through Lemington Point, and the river opposite Blaydon has been widened from 150 feet to 400 feet. The effect of these works when completed will be the shortening of the distance between Newburn and Scotswood about three quarters of a mile, as well as increasing the tidal receptacle, and so assisting in the maintenance of the lower portions of the river channel.

At Newcastle, the old Bridge, a great obstruction to navigation and the flow of the tide, has been removed, and a new bridge, now in a forward state, is in course of construction. This bridge is to consist of four openings, corresponding with those of the High Level Bridge; the two central openings, each 104 feet, are to be spanned by girders made to swing round and allow masted vessels to pass through up the river. The piers and abutments of the bridge which are completed are made of stone and concrete, on foundations of cast-iron cylinders, filled with concrete, sunk down to the rock about 45 feet below low water.

The superstructure, in course of construction by Sir W. G. Armstrong and Co., is to be of wrought iron.

The weight of the swing or opening part will be 1,450 tons, its total length 281 feet, and the bridge will be calculated to bear safely a load of 60 tons moving on four wheels.

Going down the river, the next important work is the removal of Bill Point, which was a most dangerous obstruction to the navigation, both from the sharpness of the turn, which made it difficult to steer a vessel of moderate length round it, and from the height of the bank (72 feet above high water) which prevented those in charge of vessels seeing other vessels that might be approaching on the other side of the point.



PLAN
of the ENTRANCE to the
RIVER TYNE

Soundings in feet below low water.

Scale two inches to one statute mile.

A Reid, Newcastle on Tyne.

This work, now nearly completed, involves the cutting away of the cliff, about 400 feet back.

The total quantity of earth and rock removed to the present time is about 1,200,000 tons, most of which has been filled into hoppers, taken to sea and deposited, like the dredgings, in deep water.

Within the last two years the outer end of the Northumberland Dock has been deepened and enlarged, and two jetties, having a minimum depth of 21 feet, with cranes for landing import cargoes, have been completed with a wharf 100 feet wide behind the jetties, on which are railways communicating with the Blyth and Tyne, now part of the North-Eastern Railway. A river side wharf, about 1,100 feet long, with a depth of water alongside of 18 feet at low water spring tides, has been constructed outside the dock, in connection with which are railways, with quays and standage ground to the extent of 114 acres.

Above the wharf are two shipping staiths, which project into the river 97 feet from the quay, where there is a depth of 25 feet at low water spring tides.

These staiths are self-acting; the loaded waggons, brought within about 540 yards by locomotive engines, descend to the shipping spouts by their gravity, whilst the empty waggons, after having discharged their loads, run by their own gravity off the staith to a place where the locomotives can take them from. Each of the staiths has three spouts, so that coals may be simultaneously loaded into three hatchways of a ship; and the upper staith is constructed so as to commence loading, if necessary at high water spring tides, a vessel of 20 feet side, or the hatchway coaming of which is 20 feet above the floating water line.

When the three spouts are used, from 800 to 1,000 tons of coals per hour may be loaded into a vessel at each of the staiths.

The first (or lower) staith was opened in February last, the second (or upper) staith is just completed.

In 1872, the Tyne Commissioners obtained power to make a new dock in the Coble Dene, on the north side of the river, below the new wharf outside the Northumberland Dock, and at the upper end of Shields Harbour.

This dock is to have an enclosed water space of 24 acres, surrounded by 3,650 lineal feet of deep water quays. Provision is also made for its future extension towards, and ultimate junction with, the Northumberland Dock.

There is also to be a river wall in front of the dock 900 feet long, with a minimum depth of 20 feet at low water spring tides. There are to be a tidal entrance 80 feet wide, and a lock 60 feet wide and 330 feet long. The depth of water on the sill is to be 30 feet at high water spring tides, and 26 feet at high water neap tides. The dock is intended chiefly for import traffic, and in connection with and adjoining it are 170 acres of wharf and standage ground.

As the dock is to be made chiefly inland the excavation will be very heavy, amounting to about 5,000,000 tons, a large proportion of which will be removed by dredgers, and deposited at sea by hoppers, the rest of the excavation not taken to sea being used to level the wharves and standage ground.

The work was commenced in April last, and will probably be completed in about four years from this time.

The above works, except where otherwise stated, were constructed from the designs of Mr. J. F. Ure, who actively superintended them until October, 1870, when he partly, and in February, 1873, when he wholly, retired from the active superintendence, and remains Consulting Engineer.

The whole of the works now in progress for the Tyne Commissioners are now under the charge of Mr. P. J. Messent, as Acting Engineer, who superintended the Piers Works from their commencement first as Resident, and afterwards as Acting Engineer.

THE RIVER TYNE.

The River Tyne runs through much beautiful and varied scenery, and is formed by the union of two streams, the North Tyne and the South Tyne.

The South Tyne takes its rise on the slopes of Cross Fell, Cumberland, and runs through scenery of a wild and romantic character, in a northerly direction to Haltwhistle, passing on its way Featherstone and Bellister Castles. From Haltwhistle it takes an easterly course, passing, upon the right, Unthank Hall, and on the left Willimonstwick Castle, the birthplace of Ridley, the martyr. After receiving the tributary waters of the Allen, the river passes the populous village of Haydon Bridge, and joins the waters of its sister stream a little above Hexham.

The North Tyne rises upon the border land between the two kingdoms a little beyond Kielder Castle, a shooting box of the Duke of Northumberland. The heath-clad hills, through which this portion of the river runs, are rich with the traditions of border warfare and misrule. Flowing eastward, the river reaches Bellingham, the most important "town" in the district; and, shortly after, receives the tributary waters of the Reed. The valley of the North Tyne here rapidly loses its moorland characteristics; and in its course down to Chollerford the river passes several country residences, formerly the fortified strongholds of the principal border families. Amongst these may be mentioned Chipchase Castle, the seat of Hugh Taylor, Esq.; Swinburne Castle; and Houghton Castle, the seat of George Crawshay, Esq. At Chollerford the river crosses the line of the Roman Wall. On the right bank of the river is the Roman Station of Cilurnum, and the Chesters, the residence of John Clayton, Esq. Flowing onward past Warden Hill, it joins the waters of the South Tyne.

Shortly after the junction, Hexham, on the right bank, is passed; and, further on, Dilston Castle, the ancient seat of the Earls of Derwentwater, is reached. Leaving the village of Corbridge and Bywell on the left, and Riding Mill on the right, we have the remains of Prudhoe Castle, belonging to the Duke of Northumberland. The smoke from the Mickley Coke Ovens shows that we are already within the manufacturing district of the Tyne. To the east of Wylam, on the left bank, is the cottage in which George Stephenson was born; further on, at the river edge, is a pumping station belonging to the Newcastle and Gateshead Water Company, and on the bank the village of Newburn, where are the steel works of Messrs. John Spencer and Sons. After passing Ryton on the right, and having got within the area of the tidal waters, we have the shipping staiths of the Towneley Coal Company, and immediately afterwards we reach the rising town of Blaydon, where are situated the firebrick works of Messrs. Joseph Cowen & Co., and of Messrs. Harriman & Co.; the iron foundry of Messrs. Nicholson & Wilson; and the saw mills of Messrs. John Nicholson & Sons. The Blaydon Chemical Co. also have their works here.

After passing Blaydon we enter a new channel, one of the Improvement Works of the Tyne Commissioners. Lemington is seen on the left bank, of the old course, where are the iron works of the Tyne Hematite Iron Co.; the glass works of Messrs. Harrison; the firebrick works of Messrs. W. Stephenson & Co.; and the shipping places of the Wylam and Walbottle Collieries. Proceeding onwards we reach the manure works of Messrs. Thomas Colbeck & Co., the paper works of Messrs. Fletcher & Falconar, and the firebrick works of Mr. Wm. C. Gibson. At Scotswood the river is crossed by two bridges. The first carries

The House in which George Stephenson was born.

the Newcastle and Carlisle Branch of the North Eastern Railway; the second is a suspension bridge for ordinary traffic. Between the two bridges are the paper works of Messrs. Grace & Co. Shortly afterwards we come, on the right bank, to the fire brick works of Messrs. G. H. Ramsay & Sons, at Derwenthaugh, where the small river Derwent enters the Tyne. Here also are the staiths of Garesfield Colliery, belonging to the Marquis of Bute; the coke ovens attached thereto; and also those belonging to Messrs. Ramsay. On the left bank are the firebrick works of Messrs. John O. Scott & Co.; at Paradise are the Venetian Red works of Messrs. Hoyle, Robson, & Co., and the firebrick works of Mr. W. Cochran Carr. A short distance from the river are the tanneries of Messrs. Priestman & Son. We have now reached the western boundary of the borough of Newcastle. The island dividing the stream is known as the King's Meadows. Following the example set by nature we will from this point divide the description of the river into two sections, taking each bank separately.

NORTH SIDE.

Immediately within the borough we have the world-famed engine works belonging to Sir William George Armstrong and Partners, followed in close proximity by the ordnance establish-

SOUTH SIDE.

On this bank of the river we have the village of Dunston, at which are the chemical works of Messrs. T. Burnett & Sons, the saw mills of Messrs. Palmer, Hall, & Co., and the works of the Dun-

NORTH SIDE.

ment for the manufacture of the Armstrong guns, and the blast furnaces belonging to the same Company, the whole presenting a range of buildings which for magnitude and the importance of the work produced has few rivals.

On the bank, above some vacant ground and a little distance from the river, will be observed the Carlisle branch of the North Eastern Railway, formerly the property of a separate Company; this was the second line in the kingdom for which Parliamentary powers were obtained, and the third to be opened. We next come to the extensive tanneries and leather dressing establishment of Messrs. J. & E. Richardson; closely adjoining which are the forge and boiler yard of Messrs. J. Waterson & Co., and the engine works of Messrs. T. Clark & Co. Passing the

SOUTH SIDE.

ston Engine Works Company Limited.

Here the "Team" flows into the Tyne. In its course it traverses the Ravensworth Vale, on the left bank of which is Ravensworth Castle, the seat of the Earl of Ravensworth. The east bank is being rapidly covered by the villas of merchants and others carrying on business in Newcastle.

On the banks of the Team are the wire rope works of Messrs. Newall & Co.; the firebrick works of Messrs. Lucas; the brick works of the Redheugh Brick and Tile Co. Limited; and the Rolling Mills of Messrs. J. Abbot & Co.

The mansion seen amongst the trees on the bank of the Tyne at Redheugh, formerly belonged to the Earl of Derwentwater. Becoming surrounded by manufactories

NORTH SIDE.

works of the Newcastle and Gateshead Gas Co., we have the lead works of Messrs. Walkers, Parker, Walker, & Co., the shot tower connected with which, built at the latter end of the last century, forms a prominent object in the view. On the shores of the river will be noticed the boat-houses belonging to the different rowing clubs. To the oarsman, this part of the Tyne will be looked upon almost as classic ground, it being the Tyne champion course, associated with the well-known names of Clasper, Coombes, Chambers, Renforth, and Kelly.

It is impossible to refer to all the various objects which now cluster together in the town; but the engineering establishments of Messrs. R. and W. Hawthorn and Co. and of Messrs. R. Stephenson and Co. will be noticed

SOUTH SIDE.

its charm as a dwelling is being rapidly destroyed.

Proceeding eastward, we come to the Redheugh Goods Wharf, connected with the Carlisle Branch of the North Eastern Railway.

The river is now spanned by the Redheugh Bridge. The length of each of the two centre spans is 240 feet, the underside of the platform being 87 feet above high water mark. A noticeable feature in the construction of the bridge is that the circular tubes at the top of the lattice work girders are made to carry the supply of gas from the works at Newcastle to the borough of Gateshead. The pipes belonging to the Water Company are carried on the platform of the bridge.

We are now fairly opposite the town of Gateshead; one of the chief objects observable is the extensive work-

NORTH SIDE.

on the bank above the river. Proceeding onward, we have at the river's edge the steam flour mills of Messrs. Davidson and Sons, and the steam saw mills of Messrs. Carr & Co ; the old Mansion House, belonging to the Corporation of Newcastle, forms part of the premises occupied by the latter firm.

We now arrive at the High Level Bridge, and immediately afterwards the Tyne Bridge. The old Tyne Bridge has been pulled down, and at the present time the Tyne Commissioners are building a new swing bridge on its site.

Having passed the bridges, the first object on the left bank is the old Guildhall, distinguished by the clock-turret on the roof. The ground floor is used as a Commercial Exchange.

We now reach the public

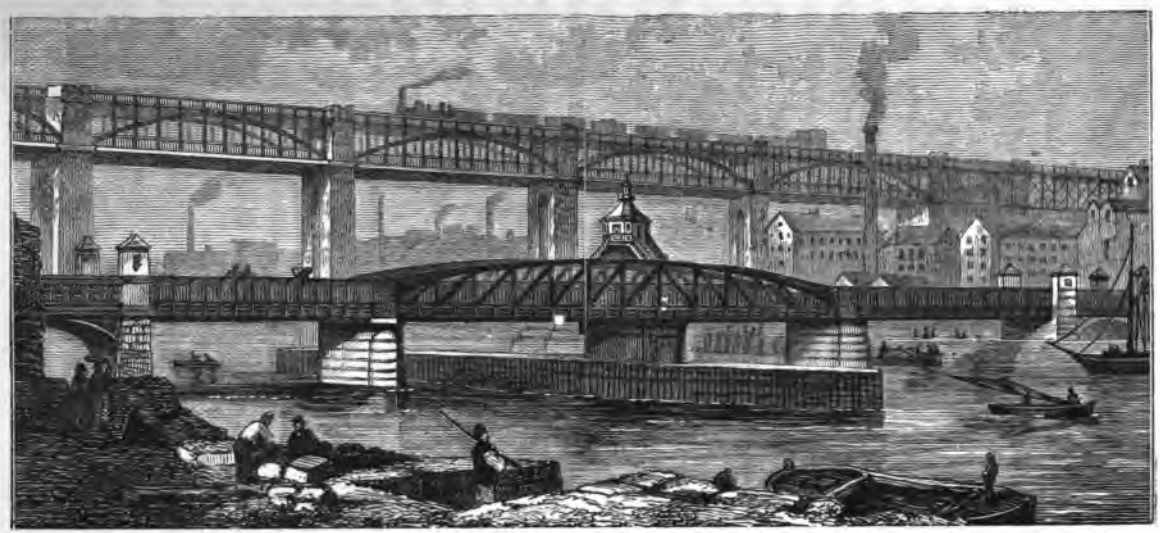
SOUTH SIDE.

shops of the North Eastern Railway Co., situated on the bank top. This being the Company's principal establishment, a large proportion of the repairing and rebuilding of locomotives belonging to the Company is done here.

On the shores of the river, amongst other works, are the Tyne paper mill belonging to Mr. Ald. Muschamp ; the fire brick works of Mr. J. Snowball ; and the glass works of Messrs. Price & Co.

Below the bridge we have the hat manufactory of Messrs. Miller & Co., and the steam flour mill of Messrs. Sutherland Bros.

The vacant space immediately to the east, is the site of the warehouse in which, on the 4th day of October, 1854, a fire, and terrific explosion, took place. The warehouse contained a large quantity of brimstone and other inflammable materials,



The New Swing Bridge (in course of Construction), Newcastle-upon-Tyne.

The total length of the swing or opening portion of the low bridge is 281 feet, the weight of this portion being 1,450 tons.
The carriage way of the High Level Bridge is 1,337 feet in length and 85 feet in height.

NORTH SIDE.

quay of Newcastle, which is usually well occupied by ships discharging cargo.

About half way along the quay is the landing stage of the Tyne Ferry Company; immediately to the east, the sixty-ton crane, used principally for fitting the machinery into steamers, forms a prominent object. The portion of the Quay for some distance to the eastward of the crane, is entirely occupied by the berths of the regular lines of steamers to British and foreign ports. As we proceed eastward, the rope works of Messrs. Crawhall are easily distinguished by the chimney: an ingeniously contrived model of a piece of rope. The spire of St. Ann's Church also forms a prominent object on the hill. On the Quay, immediately below the church, the foun-

SOUTH SIDE.

which, by the force of the explosion, were scattered over the adjoining houses and hurled across the river on to the houses in Newcastle, causing a series of fires to burst out round about the site of the original one, resulting in great loss of life and property. Part of the ground rendered vacant by this calamity was formed into a public quay for Gateshead, but is at present leased to the North Eastern Railway Company.

Adjoining it are the wire rope works of Messrs. Haggie and Co.; and next to them, the shipping wharf belonging to the North Eastern Railway Co.; followed in succession by the Marley Hill coke ovens; the marble works of Messrs. Walker, Emley, and Beall; the wharf of the Weardale Iron Company Limited, and the wharf

NORTH SIDE.

dations are being put in for a crane capable of lifting 80 tons. To the east of this the Quayside branch of the North Eastern Railway comes down to the Quay. The ornamental engine-house and chimney, recently built by the Corporation, form part of the plant used for supplying hydraulic power for working the cranes in the sheds and on this portion of the Quay.

The Ouseburn, a small stream, falls into the Tyne at the east end of the Quay. After passing this, we reach the premises formerly occupied by the Newcastle Broad and Crown Glass Co., who at the time of their prosperity were one of the largest manufacturing firms in the kingdom. By the census of 1831 there were 200 males of upwards of 20 years of age, living in this district, en-

SOUTH SIDE.

connected with the iron works of Messrs. John Abbot and Co. Limited—the rolling mills, engineering works, foundry, etc., belonging to this Co. being situated on the hill immediately above the wharf.

The rolling mills and iron works on the river-side are those of the well known firm of Messrs. Hawks, Crawshay, and Co., the engineering and chain making portion of the establishment being behind.

Next, comes the engineering establishment of Messrs. Clarke, Watson, and Gurney, followed by patent nail works; and the timber yard of Messrs. Farley, Clark, and Berkley.

The next works are those of Messrs. I. C. Johnson and Co., cement manufacturers,

NORTH SIDE.

gaged in the glass trade. This trade has entirely left the district; portions of the premises are now unoccupied and in a dilapidated condition. Other parts are occupied by Mr. John Burrell as manure works, and by other persons. After passing the saw mills of Messrs. John Carr, jun., & Co. we approach the "Mushroom" landing stage (more properly called Saint Lawrence), close to which, but unseen from the river, are to be found the ruins of the ancient St. Lawrence chapel-of-ease to All Saints' parish church; adjoining, and immediately to the east of the landing stage, are the artificial manure works of Messrs. Sampson Langdale & Co. Limited, one of the most extensive works of the kind in the kingdom.

Next to these works are

SOUTH SIDE.

the largest and oldest establishment of the kind on the Tyne. On a portion of the quay, within the range of these works, are some of the chain cable shops belonging to Messrs. Hawks, Crawshay, and Co.

Passing some unoccupied premises, we see the extensive establishment belonging to the Tyne Chemical Works Co. Limited, formerly Messrs. C. Allhusen and Sons. These are the largest chemical works in one undivided establishment in the world, and occupy a considerable space along the shore. Next follow the Tyne Main staiths, and adjoining them, the slipway of Messrs. Gaddy and Lamb.

NORTH SIDE.

the shipbuilding yard and slipway of Messrs. Edward Lindsay and Co.

After passing St. Peter's Wharf we have in rapid succession the pottery of Messrs. Thos. Fell and Co. Limited, the chemical works and glass-houses of Mr. Ald. Ridley, the chain and anchor manufacturing establishment of Messrs. Wm. Hood and Co., the works of the Newcastle Cement Company, the chain and anchor works of Messrs. Wm. Shields and Co., and the workshops and repairing yard of the Tyne General Ferry Company. Adjoining the last-named are the docks and building shed belonging to, and formerly occupied by, Messrs. T. and W. Smith, but now used as a boiler yard, and forming part of the establishment of Messrs. R. and W. Hawthorn and Co., the well-known loco-

SOUTH SIDE.

Upon the point which we now approach, are the Friars' Goose chemical works, now belonging to the Jarrow Chemical Company. These works were established in 1831 by the late Mr. Anthony Clapham, and are the second oldest chemical works on the river; behind the works is the Friars' Goose colliery, belonging to the Tyne Main Coal Company.

Having rounded the point, the white house seen perched on the edge of the bank is called the "Hawk's Nest," where some vestiges of trees

NORTH SIDE.

motive and marine engine builders, Newcastle. At this yard many of the fine old wooden ships, forming the well-known East India line of Messrs. T. and W. Smith, were built, amongst the most popular of them being the "Blenheim," the "Hotspur," and the "Marlborough."

From this point the banks of the river come precipitously down to the water's edge, showing a limited section of the coal measures' formation.

At the present time, the works connected with the formation of the new north river-side branch of the North Eastern Railway may be noticed in rapid progress.

At this part of the river it is not unusual to see large ships and steamers lying discharging cargoes; chiefly the mineral productions of other countries—pyrites, iron ore, lead, &c., to be used as raw

SOUTH SIDE.

and shrubs are to be seen. In "the good old times" the precipitous banks of the river, on both sides, here and lower down, were clothed with woods. On the less precipitous portions, many houses, the residences of past generations, stood near the river, with gardens stretching down to the water's edge, causing the river to be one of the most picturesque "highways" in the district.

Next we have the shipping staiths and quay belonging to the Felling Coal, Chemical, and Iron Co. Limited, the chimneys, sheds, and rolling mills being visible on the high ground above.

The adjoining wharf forms part of the extensive chemical works of Messrs. Hugh Lee Pattinson and Co., the works being situated on the hill behind

NORTH SIDE.

materials in the neighbouring manufactories.

The landing stage at St. Anthony's is next come to, directly after passing which are the extensive lead works of Messrs. Locke, Blackett, and Co., where, in conjunction with their works in Gallowgate (Newcastle), lead is refined, rolled into sheets, and fabricated into pipes, shot, white lead, red lead, litharge, &c.

Behind the lead works of Messrs. Locke, Blackett, and Co., but not visible from this portion of the river, is the old-established pottery of Messrs. Sewell and Co.

After passing one or two small cottages, ship-repairing yards, &c., we come to the chemical works of Messrs. Cook. The heap of alkali waste to the east of the works, while testifying to a large amount of business, gives the bank of the river

SOUTH SIDE.

the houses. Little but the chimneys are visible from the river.

The oil mill of Messrs. Hoyle, Robson, and Co., the grindstone wharf of Messrs. Richard Kell and Co., the paper mill of Messrs. T. W. Gallon and Co., and the chemical works of Messrs. Robt. Imeary and Co. follow in rapid succession.

The chemical works, partly on the edge of the river and partly on the hill above, are those of Messrs. Thomas Bramwell and Co.

After passing the Parish Quay, usually covered with grindstones, and the Heworth Shore landing stage, the chemical works of Messrs. T. Burnett and Sons are seen; adjoining these are the chemical works of Messrs. Cook Brothers, and

NORTH SIDE.

a barren and unprepossessing appearance.

The next manufacturing establishment comprises the oil mills and manure works of Messrs. Hodgson Brothers and Hodgson.

We have now to round Bill Point, which formerly projected considerably further into the river; it is at present being removed as one of the works of river improvement carried out by the River Tyne Commissioners. An idea of the magnitude of the work may be formed from the fact that already 1,200,000 tons of earth have been removed.

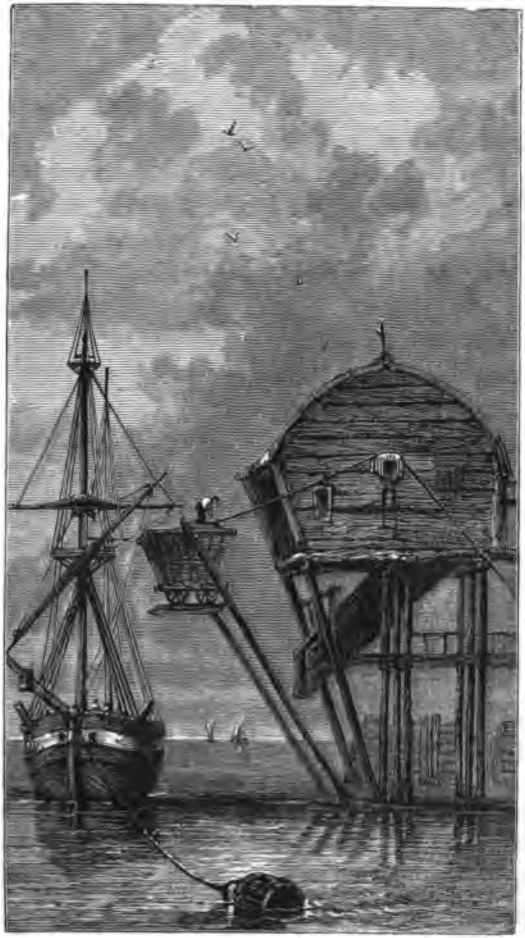
On the high ground immediately after rounding this point are the works recently belonging to the Walker Alkali Company, but now one of the establishments of Messrs. J. Lomas and Co. Limited. These works were

SOUTH SIDE.

immediately to the east the Bill Quay Bottle Works, which have been standing idle for many years. Proceeding onwards past the shipbuilding and repairing yard of Messrs. Boutland, this bank of the river becomes precipitous opposite to Bill Point. Here, again, we see vestiges of the wooded slopes that lent so great a charm in former days to a sail down the river in "Jemmy Johnson's wherry."

The next objects requiring notice are the shipping staiths for Pelaw Main, Heworth, and Urpeth Collieries. In connection with the first-named is the wharf of the Birtley Iron Co.

Some of these staiths are



Old Staith on the Tyne.

NORTH SIDE.

originally started about the beginning of this century by Mr. Losh, who, having been the first to introduce the present system of manufacturing soda into this country, is entitled to be considered the father of the chemical trade.

At the water's edge are the extensive ironworks, blast furnaces, rolling mills, foundry, and engine works carried on for many years by Messrs. Losh, Wilson, and Bell. The blast furnaces are now carried on by Messrs. Bell Brothers; the engine works by Messrs. Bells, Goodman, and Co.; the remainder of the works at the present time are idle.

We now arrive at the Walker landing stage, and should the reader be induced to land, there can be little doubt that a short experience of the charms of the locality

SOUTH SIDE.

still of the old-fashioned type; the full waggon of coals is lowered to the level of the ship's deck, their descent being retarded by a balance weight which, in its turn, re-elevates the empty waggon.

After passing the slipways of Messrs. H. & D. Moris, the next important establishment to be noticed, is the copper extracting works of the Tharsis Sulphur and Copper Co. Limited; then we come to

NORTH SIDE.

will satisfy him of the truth of the local saying that "There is nee place like Warker."

Passing the vacant plot of ground immediately after the Ferry Boat Landing, we come to Lloyd's Chain and Anchor Public Testing Company's premises; and to the east we have the iron shipbuilding yard of Messrs. Charles Mitchell and Co., one of the oldest and most extensive on the river.

Next we come to the shipping staiths of the Walker Coal Company, adjoining which are the boiler works of Messrs. Thompson and Company, in connection with their engine building establishment at Spring Gardens, Newcastle.

Next in order is the shipbuilding yard of Messrs. John Wigham Richardson and Co., and the Neptune engine works of Messrs. John Shaw

SOUTH SIDE.

the property and extensive chemical works of Messrs. Charles Tennant and Co., the well-known chemical manufacturers of Glasgow, followed by the fire brick works of Messrs. G. H. Ramsay and Sons.

Immediately afterwards will be noticed one of those ballast hills which form such a peculiar feature on the banks of the Tyne. This ballast was brought chiefly from London, and other coast ports, by ships employed in the coal trade; there being no cargoes obtainable, it was necessary to load a certain portion of ballast which had to be taken out on the arrival of the vessel in the Tyne. The formation of these heaps has in many cases been going on for centuries; they may now, however, consequent on the introduction of water ballast —a Tyneside invention—be

NORTH SIDE.

and Co., which are followed in turn by the patent bolt and nut works of Messrs. H. P. Boyd & Co. Limited, the copper extracting works of Messrs. William Russell and Sons, the timber yard of Messrs. Carr and Co., and the oil-mill of Messrs. Sampson Langdale and Co.

We now enter the district known as Wallsend — its name being derived from its being the eastern terminus of the Roman Wall.

The first object attracting notice is the shipping staith of the Coxlodge Colliery, belonging to Messrs. Lambert and Co., after which we pass the iron shipbuilding yards of Messrs. Schlesinger, Davis, and Co., and of Messrs. C. S. Swan and Co.; and the chemical works of Messrs. J. and W. Allen.

About a mile to the north of

SOUTH SIDE.

looked upon as monuments of a state of trade almost passed away. Between this ballast hill and the river are the cement works of Messrs. Walter Scott and Co., and at its east end, the steamboat landing stage and the village of Hebburn Quay. At this point, and as will also be observed in many places lower down on both sides of the river, the original shore line is now a considerable distance inland. The river improvements in narrowing the channel, have formed large plots of flat land admirably suited for the establishment of manufactories, shipbuilding yards, &c.

We now come to the extensive shipbuilding yard of Messrs. A. Leslie and Co.

The steeple of the Presbyterian Church, and the buildings connected with the St. Andrew's Institute, built

NORTH SIDE.

the river is the old village of Wallsend, in close proximity to which is the now unused shaft of the Wallsend Colliery, in former years so greatly celebrated for the quality of the *household* coals it produced; hence the term "Wallsend" became a "household word" used to distinguish the "Best Household Fire Coal."

Immediately after passing the Wallsend landing stage, are the works of the Carville Chemical Company Limited, having as their next neighbours the Wallsend blast furnaces, formerly belonging to Messrs. Palmer, but now the property of the Royal Greek Iron Company, who draw their supply of ore from Greece.

We next have the shipping staiths belonging to the Killingworth collieries, together with the cement

SOUTH SIDE.

chiefly through the munificence of Mr. Leslie, are prominent objects in the landscape. Immediately behind Messrs. Leslie's yard, is noticed one of the shafts of Hebburn Colliery.

After passing some vacant land, we come to the chemical works of Messrs. Sheldon and Nixon, and, next, the

NORTH SIDE.

works of Messrs. Robinson and Allen; and immediately behind the staiths will be noticed two large chimneys, connected with the pumping apparatus of the Tyne Coal Company Limited. The water pumped from the mines may be seen (except at high tide) tumbling over the river wall into the Tyne. Several collieries on both sides of the river having been drowned out, this company was formed for the purpose of draining the whole. After a vast amount of pumping they have been partially successful, and some of the pits have been re-opened.

Close by, to the east, are the lead smelting works now belonging to Messrs. Locke, Blackett, & Co.

Next in order we come to the Rosehill Chemical Works, belonging to Messrs. John

SOUTH SIDE.

metal extracting works of the Bede Metal and Chemical Co., Limited, and the Monckton Manure Works, belonging to Messrs. Sampson Langdale and Co. Limited.

Immediately before reaching the Hebburn landing stage, are the new shipping staiths connected with Heb-

NORTH SIDE.

Lomas & Co. Limited; and immediately afterwards are the works of the Wallsend Cement Company Limited.

Proceeding eastward, we have the extensive ship repairing works of the Wallsend Slipway Company, recently established with all modern improvements, and capable of accommodating four of the largest steamers at one time.

The Willington viaduct of the Tynemouth branch of the North Eastern Railway is here seen spanning Willington Dean.

On the east side of the Dean the first works we arrive at is the copper refining establishment of the Tharsis Mining Co.

We next pass the slipways and repairing yard of Messrs. Cleland & Co. Limited; immediately adjoining which is the shipbuilding yard of Messrs. Cole Brothers.

SOUTH SIDE.

burn Colliery. This colliery, which is seen a short distance from the river, has been "drowned out" for several years; it now forms part of the property belonging to the Tyne Coal Co. Limited. The resumption of work is due to the extensive pumping operations referred to in the description of the left bank of the river.

Directly to the south of the landing stage are the extensive lead works of Messrs. Foster, Blackett, & Wilson.

NORTH SIDE.

The next (at present unoccupied) yard is part of the property of Messrs. Palmer's Shipbuilding and Iron Co. Limited.

We have now the Tyne Cement Works belonging to Mr. Addison Potter, the present Mayor of Newcastle, and next to them the lead smelting works of Messrs. Cookson & Co., the chimney connected with which will be observed standing on the ballast hill behind. George Stephenson, the inventor of the locomotive, was at one time brakesman to the engine by which the ballast trams were drawn up.

Here is the landing stage for Willington and Howdon; and close to the end of the street, leading from the landing, although not observable from the river, are the "Stephenson Schools," built on the site of the cottage in which George Stephenson

SOUTH SIDE.

After passing the Kibblesworth and Marley Hill staiths we arrive at the gigantic establishment belonging to Messrs. Palmers' Shipbuilding and Iron Company Limited, one of, if not the largest manufacturing establishments on the Tyne, consisting of blast furnaces, rolling mills, engine works, and shipbuilding yard, the raw material entering at one end of the works as iron ore, and passing out at the other in the form of screw steamers, complete and ready for sea.

The development of these works has led to the expansion of Jarrow from a small village into a town, with a present population of 25,000 people.

Proceeding onwards are the chemical works of Messrs. R. Frazer and Sons, adjoining which, to the south, is the iron foundry of Mr. C. B. Glover, followed by the

NORTH SIDE.

lived for a number of years, and in which "little Robert" was born.

After passing the landing stage are the Venetian Red works of Messrs. Cookson and Co., followed by the alum works of Messrs. H. D. Pochin & Co., a well-known Manchester firm; and adjoining them is the establishment belonging to the River Tyne Commissioners, for the repair of the large plant which the enormous works carried out by them render it necessary for them to employ.

Immediately after passing the Commissioners' Works we come upon the premises of the Northumberland Dock, also the property of the River Tyne Commissioners. This dock, which is used exclusively for the shipment of coal from the Northumberland Hartley

SOUTH SIDE.

chemical works of Messrs. John Lomas & Co. Limited, and, in close proximity, the chemical works of Messrs. Richardson, who are also the proprietors of the Monckton paper mills, situated about a mile to the southward.

Behind the hill, and almost hidden from view, are the Jarrow Hill Chemical Co.'s works, belonging to Messrs. Jefferson & Partners.

We now arrive at Jarrow Slake, a large open tract, bare at low water, but covered by the tide twice a day. The River Tyne Commissioners

NORTH SIDE.

Steam Coal District, was formed by the enclosure of a portion of the river; the shipping staiths existed in their present state previous to its formation. The dock has an area of 55 acres, with 24 feet water on the sills at high water spring tides. In 1873, 2,628,154 tons of coals were loaded in the dock.

On the north bank of the dock we observe the lead works of Messrs. Cookson & Co. The Tyne General Ferry Co. have a landing place on the dock wall.

Immediately after passing the gates at the east end of the Northumberland Dock, we come to the Whitehill Point staiths and quay, just completed, belonging to the River Tyne Commissioners; deep water has been made alongside the staiths, the intention being

SOUTH SIDE.

have recently purchased the rights of the proprietors over the western side, and are converting it into timber ponds.

At the south-west angle of the Slake, Jarrow Church is an object to be looked on with some degree of interest, it having formed part of the monastery where lived the Venerable Bede. Window glass was first used for architectural purposes in Great Britain at the monasteries of Jarrow and Monkwearmouth. The effect led to the tradition that "it was never dark in Old Jarrow Church."

The group of manufactories on the south shore of the Slake, comprise the rolling mills of Messrs. J. Elliott and Co., the chemical works of Messrs. S. Mease and Co. and of the St. Bede Chemical Co. Limited.

NORTH SIDE.

that steamers may come in direct from sea at any time of the tide, go alongside the staiths without having to wait for the opening of the dock gates, load, and go to sea again, also, irrespective of the state of the tide.

On the point projecting into the river are the staiths belonging to the Backworth Coal Co.

The valley to the east is Coble Dene, the site of the proposed Coble Dene Dock, for the formation of which the Tyne Commissioners obtained powers in their Act of 1872. The dredging is already in progress.

We are now within the precincts of Shields Harbour which is usually crowded with shipping.

The "Wellesley" training ship, lying in the river, forms an interesting object at this point.

SOUTH SIDE.

On a clear day, the monument, erected to the memory of the late Earl of Durham, on Penshaw Hill, may be seen in the distance to the south.

The Tyne Dock, belonging to the North Eastern Railway Co., is situated at the east side of the Slake. This dock has an area of 50 acres. In 1873, 2,714,366 tons of coal were shipped in the dock, the imports and exports of general merchandise being 386,993 and 51,556 tons respectively. The Railway Company are on the point of making extensive additions to the area of the dock.

On the east side of the dock are the extensive works belonging to the Jarrow Chemical Co.

We are now at South Shields. Passing through the harbour, we come, in

NORTH SIDE.

Another large ballast hill will be noticed immediately after passing the Coble Dene. The wooden hut upon the top is the station from which the time gun is fired daily by electric current from Greenwich observatory.

Immediately to the east of the ballast hill are the docks and shipbuilding sheds of Messrs. T. & W. Smith.

The banks of the river are here entirely covered with the dwelling houses, manufactories, ship chandlers' stores, &c., of North Shields, of which it is impossible to give any detailed description.

As we approach the lower end of Shields harbour, Her Majesty's ship "Castor," the training ship of the naval volunteers of the district, is seen. The two lighthouses, one on the hill and the other at the

SOUTH SIDE.

quick succession, to Edwards' Dock, the Middle Dock, Metcalfe's Dock, Wilson, & Blain, and Commons' Docks, and in close proximity to the Mill Dam landing stage, are the Tyne Plate Glass Works, belonging to Mr. C. M. Palmer, M.P., and Partners; further on, the "John Straker" mission ship, fitted up as a chapel, with library and reading room for sailors, will be seen.

At the eastern extremity of the harbour are the shipbuilding yards of Messrs. J. Redhead and Co., and Messrs. J. Softley and Co.

The harbour is constantly traversed by two steam ferries, one, direct, for foot passengers only, and the other, which plies between the New Quay at North Shields and the Market Place at South Shields, being

NORTH SIDE.

water side, respectively known as the "high" and "low lights," are for the purpose of guiding vessels into the harbour.

The monument standing close to the bank of the river is erected to the memory of Admiral Lord Collingwood.

At the mouth of the river is the watering place of Tynemouth—the Brighton of the north. The ruins of the old Priory standing on the edge of the cliff are exceedingly beautiful. Whilst looking on them with the feelings of admiration they must ever inspire, it is impossible not to regret that only so small a portion remains.

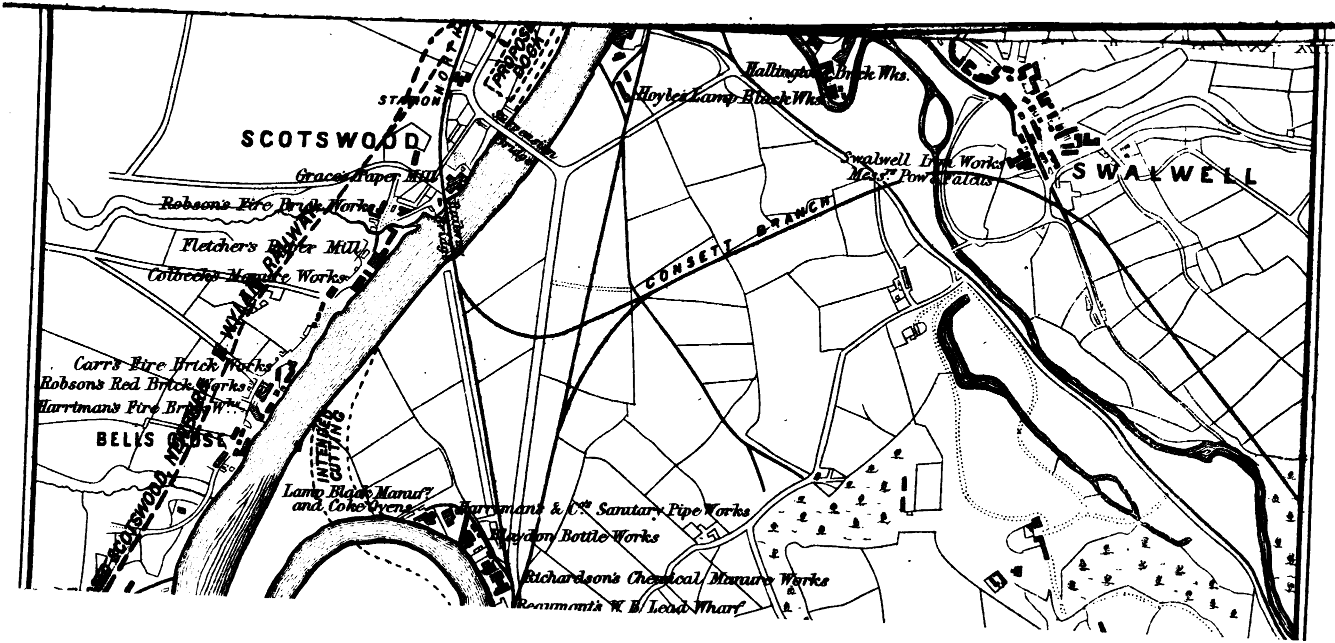
SOUTH SIDE.

adapted for the carriage of horses and vehicles as well as passengers.

At the eastern extremity of the river, projecting into the sea on both sides, are the piers built by the River Tyne Commissioners for the protection of vessels desirous of entering the river in bad weather; they are already considerably advanced, and have not only been of use in protecting vessels bound for the Tyne, but have rendered the entrance so safe even in stormy weather that vessels bound for other ports frequently make use of the Tyne as a "Harbour of Refuge" in which to seek shelter from the perils of the sea.

It is satisfactory to be able to conclude this description of the Banks of the Tyne by a reference alike honourable to each of the sister Boroughs at its mouth; for while South Shields is justly proud of having been the first town in the kingdom to establish a life-boat, Tynemouth may be congratulated on having organised the first volunteer

View of Tynemouth Priory from the west.


SCOTSWOOD
STATION
NORTH
PROPOSED DOCK
Suspension Bridge
Railway Bridge
Grace's Paper Mill
Robson's Fire Brick Works
Fletcher's Paper Mill
Colbeck's Manure Works
WYLAM RAILWAY
Carr's Fire Brick Works
Robson's Red Brick Works
Harriman's Fire Brick Wks.
BELLS CLOSE
SCOTSWOOD NEWBURN
INTENDED CUTTING
Lamp Black Manuf.y and Coke Ovens
Hallingtons Brick Wks.
Hoyle's Lamp Black Whs.
Swalwell Iron Works Mess.rs Pow & Fawcus
SWALWELL
CONSETT BRANCH
Harriman's & C.o's Sanitary Pipe Works
Blaydon Bottle Works
Richardson's Chemical Manure Works
Beaumont's W. B. Lead Wharf

life-brigade; and, although it is hoped the piers may continue in an increasing degree to diminish the dangers that in stormy weather beset the entrance of the river, yet it cannot be doubted that, as long as such dangers exist, so long will the philanthropy of the inhabitants be exerted to reduce the risk and sufferings of the sailor to a minimum.

IMPORT LIST.

TABLE I.

SHEWING THE TOTAL QUANTITIES OF EACH OF THE PRINCIPAL ARTICLES IMPORTED INTO THE TYNE IN THE YEARS 1853, 1863, 1872, AND 1873, DISTINGUISHING THE QUANTITIES FROM EACH COUNTRY.

	1873.	1872.	1863.	1853.
APPLES AND PEARS—				
Channel Islands...Bushels	6,442	......	2,000	......
Holland ... ... ”	296	9,797	17,857	4,367
France ... ... ”	29,838	10,554	47,200	16,252
Germany ... ”	380	12,068	13,335	10,720
Belgium ... ... ”	4,949	15,947	4,258	......
Spain ... ... ”	......	22	......	......
British America.. ”	......	......	10	......
Total ...	41,905	48,388	84,660	31,339
BUTTER—				
Holland ... ... Cwts.	345	171	331	199
Belgium ... ... ”	......	66	......	......
Sweden ... ... ”	2,562	1,285	......	4
Denmark... ... ”	84,224	60,554	342	......
Germany... ... ”	12,992	12,667	31,569	17,465
Norway ... ... ”	87	33	......	......
France ... ... ”	......	18	......	......
Total ...	100,210	74,794	32,242	17,668
BEEF, PORK, AND BACON—				
Russia ... ... Cwts.	......	......	......	103
Denmark... ... ”	17,088	16,022	10	656
Norway ... ... ”	44	87	......	......
Germany... ... ”	41,769	20,831	967	2,132
North America ... ”	......	1,600	......	......
Italy ... ... ”	294	600	......	......
Belgium ... ... ”	44	97	......	......
Holland ... ... ”	52	90	24	99
France ... ... ”	......	1,493	......	......
Other Countries... ”	62	......	......	133
Total ...	59,353	40,820	1,001	3,123

		1873.	1872.	1863.	1853.
BARK—					
Norway	Tons	......	......	......	40
Germany... ...	„	......	......	47	59
Holland	„	462	895	676	1,024
Channel Islands...	„	......	......	23	......
Belgium	„	2,043	1,237	811	20
Prussia	„	......	48	.....	......
France	„	......	96	......	......
Denmark	„	......	......	......	61
Russia	„	......	......	......	37
Total ...		2,505	2,276	1,557	1,241
BONES—					
Norway	Tons	85	89	262	486
Denmark... ...	„	95	14	110	152
Holland	„	......	......	120	......
Russia	„	326	443	......	......
Portugal	„	......	......	11	......
Spain	„	158	374	......	......
South America ...	„	488	......	811	346
Sweden	„	......	3	4	54
Africa	„	......	193	......	......
Total ...		1,152	1,116	1,318	1,038
BRIMSTONE—					
Italy	Tons	......	......	584	12,600
COPPER AND COPPER ORE—					
Norway	Tons	43	83	316	......
Germany... ...	„	742	423	......	......
Portugal	„	383	......	......	......
Spain	„	3,674	5,018	134	......
Holland	„	7	......	5	......
Italy	„	130	......	......	......
Indies	„	......	55	......	......
South America ...	„	......	70	......	......
Sweden	„	......	64	......	......
Other Countries...	„	1	5	......	......
Total ...		4,980	5,718	455	......

	1873.	1872.	1863.	1853.
CHEESE—				
Holland ... ... Cwts.	23,033	20,605	18,870	22,178
Denmark... ... ,,	211	11	2	......
Sweden ... ... ,,	100	77	......	......
Germany... ... ,,	4,895	1,588	39	152
Other Countries... ,,	2	......	......	......
Total ...	28,241	22,281	18,911	22,330
COWS AND OXEN—				
Holland ... ... No.	128	312	......	915
Channel Islands... ,,	......	......	......	11
Sweden ... ... ,,	168	23	......	......
Denmark... ... ,,	12,148	7,100	......	......
Portugal ... ... ,,	......	......	3	......
Germany... ... ,,	2,282	1,461	432	207
Russia ... ... ,,	......	60	......	......
Norway ... ... ,,	......	182	......	......
Total ...	14,726	9,138	435	1,133
ESPARTO GRASS—				
Holland ... ... Tons	311	252	......	......
Portugal ... ... ,,	771	2	40	......
Spain ... ... ,,	18,162	28,167	18,328	......
Italy ... ... ,,	1,136	998	......	......
Greece ... ... ,,	5,002	3,957	......	......
Africa ... ... ,,	10,262	4,977	......	......
Egypt ... ... ,,	352	......	......	......
Russia ... ... ,,	......	6	......	......
Total ...	35,996	38,359	18,368	......
GLASS—				
Holland ... ... Cases	11	17	......	......
Belgium ... ... ,,	6,781	6,018	......	......
Germany... ... ,,	302	205	......	......
Other Countries... ,,	5	4	......	......
Total ...	7,099	6,244	......	......

		1873.	1872.	1863.	1853.
GUANO—					
South America ...	Tons	2,829	5,210	......	......
Germany... ...	„	......	......	......	441
Belgium	„	......	......	......	322
Other Countries...	„	7	......	......	......
Total ...		2,836	5,210	......	763
GRAIN.					
Flour—					
France	Sacks	416	1,421	3,959	......
Holland	„	16	......	......	......
Denmark ...	„	21,660	21,309	......	......
Germany ...	„	9,563	10,856	8,255	559
Spain	„	26,347	1,110	......	......
Belgium	„	......	2	......	......
Total ...		58,002	34,968	12,214	559
Wheat—					
France	Qrs.	33,395	32,699	......	......
Holland	„	56	......	132	2,710
Sweden	„	3,246	2,818	......	......
Denmark ...	„	30,356	25,879	22,642	20,152
Germany ...	„	1,218	10,981	6,692	24,791
Prussia	„	22,045	45,017	46,631	57,558
Russia	„	3,434	61,373	9,330	14,548
Portugal	„	9,622	964	......	......
Egypt	„	13,793	23,080	......	......
Spain	„	5,290	8,063	......	......
North America ...	„	70,956	4,630	2,568	......
Norway	„	......	815	......	......
British America...	„	......	12,596	......	......
Turkey	„	......	......	......	1,248
Total ...		193,411	228,915	87,995	121,007
Peas—					
Holland	Qrs.	8	288	72	......
Denmark... ...	„	70	2,755	1,132	366
Germany... ...	„	196	1,008	251	2,746
Prussia	„	8,868	6,652	6,052	530
Belgium	„	......	716	......	......
Sweden	„	......	......	118	......
Total ...		9,142	11,419	7,625	3,642

		1873.	1872.	1863.	1853.
GRAIN—					
Oats—					
Holland ...	... Qrs.	3,148	1,288	270	414
Norway ...	... „	1,908	532	......	......
Sweden ...	... „	54,945	30,088	2,308	......
Denmark	... „	57,901	57,331	21,449	2,213
Germany	... „	2,307	500	1,310	1,016
Prussia ...	... „	6,975	2,689	832	......
Russia ...	... „	10,200	82	814	1,500
France ...	... „	......	986	......	......
Belgium ...	... „	......	218	......	......
	Total ...	137,384	93,714	26,983	5,143
Barley—					
Holland ...	... Qrs.	4	......	......	......
Sweden ...	... „	575	1,455	508	......
Denmark...	... „	7,380	29,302	14,095	8,070
Germany	... „	180	2,676	3,231	1,350
Prussia ...	... „	5,048	7,741	2,093	......
France ...	... „	......	4,730	......	......
Belgium ...	... „	......	2,872	......	......
Spain ...	... „	......	38	......	......
	Total ...	13,187	48,814	19,927	9,420
Rye—					
Denmark...	... Qrs.	22	84	......	338
Germany...	... „	......	74	......	......
Prussia ...	... „	......	100	2,008	......
	Total ...	22	258	2,008	338
Beans—					
France ...	... Qrs.	270	......	......	......
Holland ...	... „	212	740	16	278
Belgium ...	... „	......	46	......	......
Sweden ...	... „	88	......	......	......
Germany...	... „	2,378	2,726	111	647
Prussia ...	... „	1,454	674	238	......
Africa ...	... „	1,224	......	......	......
Egypt ...	... „	......	2,112	......	......
Spain ...	... „	......	698	......	......
Norway ...	... „	......	......	......	48
	Total ...	5,625	6,996	365	973

	1873.	1872.	1863.	1853.
GRAIN—				
Maize—				
North America ... Qrs.	26,690	......	......	......
GRAIN AND FLOUR IMPORTED COASTWISE—				
Grain ... ... Qrs.	243,119	227,293	249,771	164,999
Flour ... ... Sacks	166,371	103,604	72,994	94,630
HEMP—				
Holland ... ... Tons	25	......	......	......
Belgium ... ... „	......	4	......	......
Norway ... ... „	44	......	......	......
Prussia ... ... „	1,124	552	......	......
Russia ... ... „	275	1,370	1,707	2,291
Germany... ... „	......	3	......	15
France ... ... „	......	79	......	48
Total ...	1,468	2,008	1,707	2,354
HAY—				
Holland ... ... Tons	19	30	163	......
Belgium ... ... „	13	......	......	......
Germany... ... „	......	7	......	......
Total ...	32	37	163	......
HOOPS—				
Holland ... Per 1000	21,382	23,685	9,892	4,360
Germany... ... „	8	9	3	......
Denmark ... „	......	6	......	......
Total ...	21,390	23,700	9,895	4,360
IRON ORE—				
France ... ... Tons	726	905	485	......
Holland ... ... „	......	......	15,162	......
Belgium ... ... „	2,160	1,407	8,441	......
Norway ... ... „	2,493	1,619	5,237	......
Russia ... ... „	29	222	......	......
Portugal ... ... „	12,337	1,487	100	......
Spain ... ... „	112,274	90,364	4,328	......
Italy ... ... „	5,683	4,288	231	......
Greece ... ... „	3,869	927	......	......
Carried forward ...	139,571	101,219	33,984	......

	1873.	1872.	1863.	1853.
IRON ORE (*Continued*)—				
Brought forward ...	139,571	101,219	33,984	......
Africa ... ... Tons	9,668	4,389	......	......
Egypt ... ... „	145	......	......	......
South America ... „	80	......	......	......
Denmark... ... „	......	76	......	......
Sweden ... ... „	......	58	1,290	......
Total ...	149,464	105,742	35,274	......
IRON—				
Holland ... ... Tons	832	111	555	......
Channel Islands... „	......	......	122	55
Belgium ... ... „	152	336	......	......
Norway ... ... „	113	446	32	98
Sweden ... ... „	14,341	14,576	2,488	732
Denmark... ... „	335	764	58	16
Germany... ... „	801	183	22	80
Prussia ... ... „	40	......	......	1
North America ... „	......	70	......	......
Russia ... ... „	1,002	1,033	50	......
Spain ... ... „	690	136	......	......
Africa ... ... „	292	55	......	......
Egypt ... ... „	......	71	148	......
Indies ... ... „	75	......	......	......
Turkey and Ionian Islands... ... „	......	40	......	......
France ... ... „	......	90	10	......
Total ...	18,673	17,911	3,485	982
LEAD AND LITHARGE—				
Holland ... ... Tons	155	1	69	......
France ... ... „	......	......	......	200
Belgium ... ... „	1,629	......	......	......
Sweden ... ... „	64	......	70	......
Norway ... ... „	......	......	......	41
Germany... ... „	10	......	......	2
Portugal ... ... „	1,122	81	......	......
Spain ... ... „	19,154	19,601	12,001	7,178
Greece ... ... „	6,898	7,027	......	......
Africa ... ... „	298	917	......	......
Italy ... ... „	......	855	......	......
Total ...	29,330	28,482	12,140	7,421

		1873.	1872.	1863.	1858.
Linseed—					
Germany	Qrs.	755	756	346	484
Russia	,,	1,173	......	5,544	19,417
Portugal	,,	42	......	......	......
Italy	,,	1,478	1,967	514	522
Total		3,448	2,723	6,404	20,423
Manganese—					
Holland	Tons	864	3,739	5,466	3,958
Belgium	,,	1	......	......	......
Portugal	,,	2,013	4,683	1,973	......
Spain	,,	2,195	2,946	5,046	......
Germany	,,	......	257	......	9
Total		5,073	11,625*	12,485	3,967
Nitrate of Soda—					
Belgium	Tons	33	25	......	......
Norway	,,	3	......	......	......
Germany	,,	18	......	......	......
South America	,,	6,222	6,219	......	......
Total		6,271	6,244	......	......
Oil Cake—					
Germany	Tons	44	35	......	101
Portugal	,,	242	190	......	......
Holland	,,	......	......	28	9
Total		286	225	28	110
Oil—					
Holland	Tuns	405	284	......	......
Portugal	,,	......	175	......	......
Belgium	,,	32	114	......	......
Norway	,,	125	31	......	......
Denmark	,,	11	......	......	......
Germany	,,	172	93	......	......
Spain	,,	204	25	......	......
Russia	,,	......	20	......	......
Other Countries	,,	3	2	......	......
Total		952	744	......	......

---

* Devon furnished in 1872, 4,579 tons, and in 1873, 3,626 tons.

	1873.	1872.	1863.	1853.
ONIONS—				
France ... ...Bushels	12,634	13,264	4,000	340
Holland ... ... „	59,271	39,712	27,180	8,052
Belgium ... ... „	3,764	3,774	144	......
Germany... ... „	10	84	47	872
Portugal ... ... „	9	......	400	42
Total ...	75,688	56,834	31,771	9,306
ORANGES AND LEMONS—				
Belgium ... ... Boxes	11	......	......	......
Germany... ... „	242	118	......	......
Portugal ... ... „	2,643	1,854	5,443	5,226
Spain ... ... „	1,151	3,017	......	......
Italy ... ... „	7,750	6,106	......	154
Holland ... ... „	......	......	......	20
Total ...	11,797	11,095	5,443	5,400
PHOSPHATE OF LIME—				
France ... ... Tons	10	......	......	......
Norway ... ... „	......	149	......	......
Holland ... ... „	168	98	......	......
Sweden ... ... „	......	124	......	......
British America... „	877	......	......	......
Portugal ... ... „	......	1,536	......	......
Spain ... ... „	......	460	......	......
Total ...	1,055	2,367	......	......
PYRITES AND SULPHUR ORE—				
France ... ... Tons	162	......	......	......
Belgium ... ... „	......	......	100	......
Norway ... ... „	42,816	47,873	......	......
Sweden ... ... „	76	......	571	......
Denmark... ... „	557	......	......	......
Italy ... ... „	......	......	289	......
Germany... ... „	191	200	570	......
Portugal ... ... „	49,049	29,874	21,503	......
Spain ... ... „	51,256	59,696	9,720	......
Holland ... ... „	2,389	2,615	101	......
Total ...	146,496	139,758	32,854	......

		1873.	1872.	1863.	1853.
PITCH—					
Russia ...	... Barrels	730	537	359	50
Sweden ...	... „	......	......	440	50
	Total ...	730	537	799	100
POTATOES—					
France ...	... Tons	1,116	1,340	729	163
Holland ...	... „	4,565	5,917	1,719	54
Belgium ...	... „	1,115	305	......	......
Denmark...	... „	192	523	......	25
Germany...	... „	14,409	7,630	46	247
Prussia ...	... „	3,946	1,957	......	......
Portugal...	... „	......	......	......	13
Spain ...	... „	7	5	......	......
Sweden ...	... „	......	3	......	......
Norway ...	... „	......	554	......	120
	Total ...	25,350	18,234	2,494	622
RAGS—					
Holland ...	... Tons	199	68	67	......
France ...	... „	......	......	6	......
Belgium ...	... „	481	305	......	......
Italy ...	... „	......	......	6	......
Denmark...	... „	536	941	......	......
Sweden ...	... „	......	......	96	43
Germany...	... „	52	65	280	422
Spain ...	... „	1	38	......	......
Russia ...	... „	672	518	......	......
Portugal ...	... „	......	84	......	......
Prussia ...	... „	......	365	296	......
Norway ...	... „	7	24	14	......
	Total ...	1,948	2,408	765	465
SHEEP AND SWINE—					
Holland ...	... No.	23	85	......	272
Sweden ...	... „	19	7	......	......
Denmark...	... „	12,904	7,779	......	......
Germany...	... „	35,245	20,188	11,951	3,777
North America ...	„	2	......	......	......
Norway ...	... „	......	252	......	......
	Total ...	48,193	28,261	11,951	4,049

		1873.	1872.	1863.	1853.
SEAL SKINS—					
Denmark... ...	No.	5,180	50	......	......
Germany... ...	„	16,216	21,824	23,116	3,930
Norway	„	......	......	16,769	......
Total ...		21,396	21,874	39,885	3,930
SULPHUR ORE (*See Pyrites*)					
SALT—					
Germany... ...	Tons	5,963	6,415	......	......
Spain	„	1,024	......	......	......
Portugal	„	......	501	108	241
Total ...		6,987	6,916	108	241
SUGAR—					
France	Tons	328	95	......	......
Denmark... ...	„	......	5	......	......
Holland	„	180	201	......	133
Belgium	„	......	10	......	19
Total ...		508	311	......	152
SPIRITS—					
France	Pun's	145	182	33	175½
Holland	„	19	......	14	10½
Belgium	„	1	......	......	......
Germany... ...	„	15	1	......	......
Total ...		180	183	47	186
SPIRITS—					
France	Cases	1,677	1,748	158	88
Holland	„	1,917	1,439	902	31
Belgium	„	14	10	......	......
Germany... ...	„	15	12	4	......
Denmark... ...	„	......	4	......	......
Norway	„	......	4	......	......
Total ...		3,623	3,217	1,064	119

	1873.	1872.	1863.	1853.
TIMBER.				
Deals, Battens, and Ends—				
Holland ... ... Loads	1	......	......	......
Norway ... ... „	17,496	21,543	19,605	9,934
Sweden ... ... „	47,046	36,352	6,853	2,845
Denmark ... „	179	367	1,393	......
Prussia ... ... „	5,401	4,636	3,809	2,458
Russia ... ... „	10,872	7,966	670	831
British America „	5,394	7,833	5,019	2,867
North America ... „	430	356	......	......
Indies ... ... „	27	456	......	......
France ... ... „	......	500	......	......
Turkey ... ... „	......	240	......	......
Total ...	86,846	80,249	37,349	18,935
Fir, Oak, and Hardwood—				
Belgium ... ... Loads	10	22	......	......
France ... ... „	594	709	......	......
Norway ... ... „	47,712	26,498	5,065	2,287
Sweden ... ... „	73,646	50,102	7,241	529
Denmark ... „	382	15	......	......
Germany ... „	249	168	60	176
Prussia ... ... „	17,896	22,602	22,260	14,102
Russia ... ... „	10,169	8,715	8,617	1,870
Holland ... ... „	......	120	......	4
North America ... „	9,789	10,092	......	......
British America „	20,711	29,337	28,647	18,775
Indies ... ... „	2,404	1,144	......	......
Spain ... ... „	......	......	28	......
Portugal ... ... „	......	......	54	......
Total ...	183,562	149,524	71,972	37,743
TAR—				
Norway ... ... Barrels	330	297	438	416
Denmark... ... „	......	......	70	590
Germany... ... „	881	90	66	......
Russia ... ... „	7,188	12,220	15,529	4,378
Holland ... ... „	......	......	626	20
Sweden ... ... „	......	2,591	267	4,041
Total ...	8,399	15,198	16,996	9,445
TALLOW—				
Russia ... ... Tons	11	......	97	882
South America ... „	492	......	......	......
Total ...	503	......	97	882

		1873.	1872.	1863.	1853.
WINE—					
Holland ...	... Pipes	13	1	......	2½
Belgium ...	... „	3	......	......	......
Germany...	... „	78	4	......	......
Portugal...	... „	89	133	24	192½
Spain ...	... „	36	90	......	109¾
Africa ...	... „	......	......	......	13
France ...	... „	......	8	......	0½
Total ...		219	236	24	318¼
WINE—					
Holland ...	... Cases	1,413	1,708	309	57
Portugal...	... „	......	......	12	4
Belgium ...	... „	84	86	......	......
Germany...	... „	55	96	72	9
Russia ...	... „	......	7	......	......
Spain ...	... „	37	81	2	......
Italy ...	... „	......	4	......	......
North America ...	„	3	......	......	......
Denmark...	... „	......	3	......	1
France ...	... „	......	218	616	......
Total ...		1,592	2,203	1,011	71
YEAST—					
Holland ...	... Cwts.	8,671	5,934	6,369	......
Belgium ...	... „	11	......	......	......
Germany...	... „	9,164	9,102	164	......
Denmark...	... „	......	2	......	......
Total ...		17,846	15,038	6,533	......
ZINC AND ZINC ORE—					
Holland ...	... Tons	1	......	13	......
Belgium ...	... „	58	152	189	......
Germany...	... „	39	6	......	......
Spain ...	... „	608	908	......	......
Prussia ...	... „	......	......	75	......
Italy ...	... „	254	......	......	......
Egypt ...	... „	200	......	......	......
Denmark...	... „	......	......	24	......
Total ...		1,160	1,066	301	......

TABLE II.

SHEWING THE QUANTITIES OF COALS AND COKE EXPORTED FROM THE TYNE IN 1873, TO THE CHIEF PORTS IN THE WORLD, DISTINGUISHING THE TOTAL QUANTITIES SENT TO EACH COUNTRY.

ARGENTINE CONFEDERATION.

	Coals. Tons.	Coke. Tons.
Buenos Ayres	5,129	1,340
Monte Video	4,832	...
Other Ports	793	...
	10,754	1,340

AUSTRIA.

	Coals. Tons.	Coke. Tons.
Trieste	16,440	1,285
Other Ports	4,375	207
	20,815	1,492

BELGIUM.

	Coals. Tons.	Coke. Tons.
Antwerp	52,606	2,496
Ostend	11,636	...
Other Ports	1,646	...
	65,888	2,496

BRAZILS.

	Coals. Tons.	Coke. Tons.
Bahia	2,089	...
Rio de Janeiro	35,145	7,906
Other Ports	7,200	170
	44,434	8,076

BRITISH POSSESSIONS.

	Coals. Tons.	Coke. Tons.
Aden	32,095	...
Bombay	48,574	240
Carried forward	80,669	240
Brought forward	80,669	240
Calcutta	6,098	...
Cape Town	2,373	...
Gibraltar	42,800	...
Guernsey	19,570	...
Jersey	22,037	38
Hong Kong	8,158	...
King George's Sound	2,549	...
Madras	6,956	350
Malta	71,774	122
Montreal	2,160	241
Point de Galle	43,454	...
Quebec	10,650	602
Rangoon	3,392	...
Singapore	30,804	...
Trincomalee	2,682	40
Other Ports	14,709	208
	370,835	1,841

CHILI.

	Coals. Tons.	Coke. Tons.
Iquique	5,926	...
Valparaiso	6,937	80
Other Ports	1,712	...
	14,575	80

DENMARK.

	Coals. Tons.	Coke. Tons.
Aarhuus	7,778	...
Copenhagen	94,396	223
Elsinore	76,062	873
Flensburg	6,688	296
Kastrup	2,531	...
Korsoer	4,949	...
Randers	3,195	...
Tonning	12,754	...
Other Ports	24,148	175
	232,501	1,567

DANISH POSSESSIONS.

Sundry Ports	1,115	...

EGYPT.

Alexandria	141,315	1,094
Port Said	41,058	...
Suez	15,595	50
Other Ports	551	...
	198,519	1,144

FRANCE.

Bayonne	4,045	...
Boulogne	58,426	738
Bordeaux	3,977	...
Brest	6,205	...
Caen	18,705	...
Calais	30,290	...
Cherbourg	8,121	...
Dieppe	33,672	...
Dunkirk	104,298	40
Carried forward	267,739	778

	Coals. Tons.	Coke. Tons.
Brought forward	287,739	778
Fecamp	5,842	...
Havre	93,471	50
Honfleur	7,361	...
Marseilles	16,398	...
Nice	4,501	...
Rochefort	5,793	...
Rouen	61,970	...
St. Malo and St. Servan	9,021	...
St. Nazaire	11,366	...
Toulon	2,280	...
Trouville	11,133	...
Other Ports	18,342	30
	515,217	858

FRENCH POSSESSIONS.

Algiers	6,231	...
Guadaloupe	6,969	...
Le Moule	5,278	...
Martinique	7,964	28
Oran	3,698	...
Point-a-Pitre	7,737	...
Other Ports	5,078	...
	42,955	28

GREECE.

Argastiria	4,903	19,581
Athens	5,198	...
Corfu	3,392	399
Other Ports	2,050	...
	15,543	19,980

GERMANY.

	Coals. Tons.	Coke. Tons.
Altona	6,052	...
Bremerhafen	2,735	...
Cuxhaven	3,188	...
Danzig	8,162	837
Fairwater	18,391	391
Geestemunde	3,432	...
Gluckstadt	12,297	...
Hamburg	268,822	1,326
Kiel	13,702	...
Konigsberg	2,157	554
Lubeck	13,045	89
Memel	10,529	214
Pillau	14,695	...
Rostock	6,910	116
Stettin	16,971	4,540
Stralsund	5,501	20
Swinemunde	48,063	60
Wolgast	2,390	...
Wismar	2,071	...
Other Ports	21,042	708
	480,155	8,855

HOLLAND.

	Coals. Tons.	Coke. Tons.
Brouwershaven	3,896	...
Dordt	10,536	10
Delfsiel	14,022	686
Flushing	4,219	12
Groningen	5,346	...
Harlingen	3,670	...
Niewe Diep	74,784	930
Carried forward	116,473	1,638
Brought forward	116,473	1,638
Rotterdam	40,646	306
Schiedam	6,411	...
Terneuzen	14,275	...
Other Ports	5,923	75
	183,728	2,019

DUTCH POSSESSIONS.

	Coals. Tons.	Coke. Tons.
Batavia	11,296	...
Java	5,860	...
Onrust	6,491	...
Penang	5,032	...
Sourabaya	2,176	...
Other Ports	5,096	...
	35,951	...

ITALY.

	Coals. Tons.	Coke. Tons.
Brindisi	6,093	...
Catania	2,566	...
Civita Vecchia	27,148	...
Genoa	140,429	4,796
Leghorn	24,724	967
Messina	17,878	30
Naples	24,107	475
Palermo	22,484	132
Savona	23,848	...
Spezzia	2,224	688
Salerno	2,716	...
Venice	23,203	254
Other Ports	17,569	...
	334,989	7,342

Mexico.

	Coals. Tons.	Coke. Tons.
Vera Cruz ...	737	...

Peru.

	Coals. Tons.	Coke. Tons.
Callao	13,229	100
Mollendo ...	5,404	...
Other Ports ...	2,192	...
	20,825	100

Portugal.

	Coals. Tons.	Coke. Tons.
Ferrol	2,618	407
Lisbon	41,602	873
Oporto	10,959	291
Other Ports ...	4,845	105
	60,024	1,676

Portuguese Possessions.

	Coals. Tons.	Coke. Tons.
Cape de Verde ...	3,834	...
Other Ports ...	3,016	...
	6,850	...

Russia.

	Coals. Tons.	Coke. Tons.
Cronstadt ...	140,525	8,602
Helsingfors ...	4,137	49
Muhlgraven ...	2,067	...
Odessa	47,869	...
Revel	6,917	70
Riga	22,257	1,174
St. Petersburg ...	5,515	2,439
Other Ports ...	14,784	848
	244,071	13,182

Spain.

	Coals. Tons.	Coke. Tons.
Adra	1,023	1,449
Almeria	2,105	2,997
Barcelona ...	34,888	1,131
Bilboa	9,153	940
Carthagena ...	9,900	35,280
Cadiz	10,154	331
Escombrera ...	1,152	3,757
Garrucha ...	1,051	2,312
Malaga	17,004	2,225
Motril	3,695	337
Palomares ...	744	1,413
Pomaron ...	1,443	1,192
Seville	8,961	616
Tarragona ...	3,358	...
Valencia ...	9,156	...
Villaricos ...	2,089	8,192
Other Ports ...	9,276	208
	125,152	62,380

Spanish Possessions.

	Coals. Tons.	Coke. Tons.
Havana ...	6,687	211
Other Ports ...	425	...
	7,112	211

Sweden and Norway.

	Coals. Tons.	Coke. Tons.
Bergen	27,214	151
Carlscrona ...	4,245	93
Christiana ...	28,135	33
Christiansand ...	5,935	...
Carried forward	65,529	277

	Coals. Tons.	Coke. Tons.
Brought forward	65,529	277
Drontheim ...	11,000	183
Drammen ...	1,768	1,183
Gefle	8,751	775
Gothenburg ...	66,538	1,206
Helsingborg ...	3,657	...
Horten	5,318	334
Landscrona ...	5,614	10
Malmo	13,492	1,099
Norrkoping ...	11,128	250
Stockholm ...	55,420	1,116
Uddewalla ...	2,624	70
Westerwick ...	2,891	288
Ystadt	4,401	70
Other Ports ...	33,031	1,817
	291,162	8,678

TURKEY.

	Coals. Tons.	Coke. Tons.
Batoum	2,077	...
Constantinople ...	41,813	296
Galatz	16,529	360
Salonica... ...	2,210	...
Smyrna	3,058	...
Other Ports ...	1,551	...
	67,238	656

TUNIS.

Tunis	485	...

UNITED STATES.

New York ...	10,790	...
San Francisco ...	2,438	...
Other Ports ...	1,032	...
	14,260	...

SUMMARY.

	Coals. Tons.	Coke. Tons.
Argentine Confed.	10,754	1,340
Austria	20,815	1,492
Belgium... ...	65,888	2,496
Brazils	44,434	8,076
Brit. Possessions	370,835	1,841
Chili	14,575	80
Denmark ...	232,501	1,567
Danish Possessions	1,115	...
Egypt	198,519	1,144
France	515,217	858
French Possessions	42,955	28
Greece	15,543	19,980
Germany ...	480,155	8,855
Holland... ...	183,728	2,019
Car. forward	2,197,034	49,876
Brot. forward	2,197,034	49,876
Dutch Possessions	35,951	...
Italy	334,989	7,342
Mexico	737	...
Peru	20,825	100
Portugal ...	60,024	1,676
Portuguese Possess.	6,850	...
Russia	244,071	13,182
Spain	125,152	62,380
Spanish Possessions	7,112	211
Sweden & Norway	291,162	8,678
Turkey	67,238	656
Tunis	485	...
United States ...	14,260	...
	3,405,890	144,001

TABLE III.

SHEWING THE TOTAL QUANTITIES OF EACH OF THE PRINCIPAL ARTICLES, OTHER THAN COALS AND COKE, EXPORTED FROM THE TYNE IN 1873, DISTINGUISHING THE QUANTITIES SENT TO EACH COUNTRY.

	Pig Iron.	Manufactured Iron.	Anchors.	Chains.	Manufactured Lead.	Litharge.	Lead Colours.	Copper.	Soda.	Alkali.	Caustic Soda.	Bicarbonate of Soda.	Bleaching Powder.	Alum.	Magnesia.	Painters' Colours.	Venetian Red.	Fire Bricks.	Cement.	Barytes.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tns	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tns	Tns	Tns	Tons.		Tons.	Tons.
Argentine Confederation ..	50	195	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	....	..	..
Austria	1,870	629	..	..	..	1	17	..	147	1,117	..	5	112	..	1	..	..	199,400	143	..
Belgium	6,324	975	2	5	203	10	66	713	413	7,800	306	31	650	..	8	26	48	435,600	28	49
British Possessions	45	136	..	4	5	..	3	..	72	135	7	8	..	..	33	45	13	289,800	437	..
Brazil	30	907	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	12,000	..	..
Canada	..	1,295	..	..	50	51	184	..	280	75	21	125	6	..	..	30	..	328,400	89	..
Chili	30	100	..	..	..	..	2	..	..	..	..	..	..	..	..	..	..	56,000	..	..
Denmark	484	1,417	54	153	447	14	220	8	2,200	1,938	5	21	490	2	3	8	28	1,028,200	5,378	2
Egypt	..	1,837	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	14,000	..	..
France	1,016	249	6	..	15	..	2	..	1,223	1,647	3	..	93	1	..	1	..	1,620,800	2,361	770
Germany	6,738	9,945	165	644	1,267	55	229	2,245	11,432	20,355	388	319	3,896	..	16	69	304	5,184,800	5,216	1,265
Greece	..	44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	10,000	..	..
Holland	1,608	3,802	34	185	185	8	88	1,117	8,178	3,242	224	99	859	26	12	33	53	3,652,600	1,184	272
Italy	20	584	493	286	165	15	412	21	1,475	1,713	..	79	60	41	22	70	97	977,800	83	..
Portugal	..	140	..	..	3	1	36	..	37	112	..	..	24	24	..	1	28	54,000	164	..
Peru	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	58,000	..	..
Russia	832	9,476	2	5	4,069	34	259	303	1,580	7,269	853	125	1,299	16	27	152	69	1,943,300	4,025	..
Spain	5,828	362	..	7	..	..	9	..	211	338	..	1	7	..	11	..	..	424,500	..	..
Sweden & Norway	1,765	4,160	283	902	575	40	436	16	3,023	1,730	62	6	401	68	..	166	27	1,961,000	2,127	..
Turkey	110	1,473	..	..	39	4	109	..	235	819	35	40	7	6	5	166	21	317,500	2,334	..
United States ..	2,083	1,604	..	..	408	6	886	..	12,511	14,956	60	4,459	3,170	101	29	253	1,727	35,000	138	261
Totals ..	28,833	41,330	1,039	2,191	7,431	239	2,958	4,423	43,017	63,246	1,964	5,318	11,074	265	167	970	2,415	18,602,700	23,707	2,619

TRADE CHAPTERS.

THE COAL TRADE.

The accompanying map will show the general geological features of the Northumberland and Durham coal-field. The coal in this district, as is usual, is lying in the form of a basin, the outer boundaries of which are (excepting to the south) pretty well defined. It reposes upon, and is conformable to, the millstone grit series of rocks, and is covered on the south-east side by the lower new red sandstone and magnesian limestone.

The line of sea coast from north to south may be said to divide the basin into about two equal portions. The greatest depression takes place near to the town of Sunderland, where the coal beds are at a depth of 300 fathoms, or 1,800 feet below the level of the sea. They rise from this point to the westward until, reaching the outcrop at Hownes' Gill, they come to the surface, at an elevation of 740 feet above the level of the sea—showing a total rise in the strata of 2,540 feet. Reckoning the distance between the two points, the inclination will be found to average about 1 in 40 feet. The uniformity of this inclination is, however, interfered with, by the existence of dykes, or "faults." In some cases they cross the entire coal-field, the largest causing a "down-throw" of 90 fathoms.

The northern coal-field is essentially a bituminous deposit; it does not contain any anthracite, nor (with the exception of a thin bed) any cannel coal. The district produces household coal, steam coal, gas coal, and manufacturing and coking coals—all of superior quality. A reference to the map will show the locality in which each of these particular kinds is found.

The following table shows the number, thickness, and position of the various seams of coal. As they are known by different names on the Tyne and Wear, both are given :—

TYNE.				WEAR.			
SEAM.	Average depth from surface.	Thcknss.		SEAM.	Average depth from surface.	Thcknss.	
	Fathoms.	Ft.	In.		Fathoms.	Ft.	In.
1 High Main.........	60 ...	6	0	Three-Quarter	60 ...	3	6
2 Grey Coal	74 ...	4	0	Five-Quarter..	74 ...	5	0
3 Yard Coal	84 ...	3	0	Main Coal ...	85 ...	5	6
4 Bensham...........	96 ...	4	8	Maudlin	96 ...	3	3
5 Tyne Five-Quarter	115 ...	2	8	Low Main ...	106 ...	4	0
6 Low Main	121 ...	5	0	Hutton Seam..	120 ...		
RYTON—							
7 Five-Quarter	14 ...	3	8	Beaumont ...	142 ...	2	9
8 Engine Coal	36 ...	3	10	Not found ...	— ...		
9 Main Coal	51 ...	2	9	Not found ...	— ...		
10 Horsley Wood (or Brockwell).........	67 ...	3	2	Brancepeth & Byers Green	167 ...	4	0
Total thickness ...		39	9	Total thickness..		28	0

Although there can be but little doubt that coal would be used by the ancient Britons prior to the Roman Invasion, no record of such being the case is found. That it was used by the Romans, however, is undoubted from the discovery of cinders in several of the stations on the Roman Wall. Whilst there are various early allusions to it, it cannot be considered that the trade commenced as a distinct branch of commerce before the twelfth century. Subsequently, in 1325, mention is made of a vessel trading to Newcastle from France, and returning freighted with coals. Brand states that in 1609 there were 14,000 ships engaged in carrying 300,000 Newcastle chaldrons* of coal to London, of which two-thirds went from the Tyne. From 1704 to 1710, the average foreign export of coal from Newcastle was 178,143 chaldrons per annum; and from Sunderland 65,760 chaldrons. The following table shows the total quantities vended at different periods:—

	Coastwise. Tons.	Foreign. Tons.	Total. Tons.
1800	2,381,986	138,089	2,520,075
1820	3,246,885	158,340	3,403,225
1830	3,289,241	341,062	3,630,363
1840	4,391,085	1,196,299	5,587,384
1850	6,295,570	2,176,115	8,471,685
1860	6,338,506	3,787,235	10,125,741
1870	5,817,648	5,309,050	11,126,698

These figures show the quantity of coal shipped. The diminution in the quantity of coal carried coastwise, noticeable in recent years, is due chiefly to the introduction of the produce of inland coal-fields to the

---

* The chaldron is computed at 53 cwts.

London and other markets, formerly supplied by seaborne coal. Not only is this so, but a considerable quantity of coal, which would previously have been sent by sea, amounting in 1873 to 423,000 tons, was carried by rail from this district to London alone.

Estimates have been made of the total quantity extracted from this coal-field up to the period when the publication of Hunt's Mining Records enabled accurate statistics to be given. From these the following table has been compiled :—

		Tons.
Extracted	previous to the end of the 16th century	40,000,000
Do.	during the 17th century	40,000,000
Do.	during the 18th century	130,000,000
Do.	from 1800 to 1829, inclusive	90,000,000
Do.	from 1830 to 1839 „	50,000,000
Do.	from 1840 to 1849 „	100,000,000
Do.	from 1850 to 1859 „	148,000,000
Do.	from 1860 to 1869 „	227,406,727
Do.	in 1870	27,613,539
Do.	in 1871*	30,614,577
Do.	in 1872	30,405,000
Do.	in 1873	29,744,589
	Total	943,734,432

From Hunt's Mining Records it appears that the 30,405,000 tons worked in 1872 were distributed in the following way :—

---

* In this and following years Cumberland is included in these Returns.

	Tons.
Coal exported to foreign countries	5,873,838
Coke do., 228,425 tons, computed as coal	374,466
Coal sent coastwise	4,723,701
Coke do., 8,220 tons, computed as coal	13,477
Coal carried by railway	6,245,548
Coke do., for land and local sale, 2,369,944, computed as coal	3,885,154
Coke carried by railway south of Altofts, 1,301,078, computed as coal	2,132,751
Coal and coke for railway use	595,769
Exports of coal and coke—Cumberland to foreign countries	3288
Export of coal and coke—Cumberland—coastwise	330,425
	24,175,575
Balance, being amount of local consumption	6,229,425
Total	30,405,000

From the above it will be seen that the total quantity of coal extracted from this coal-field up to the end of 1873 was 943,784,432 tons, and that the present annual output is 30,000,000 tons. The entire quantity remaining obtainable in 1871, allowing for loss and waste, appears from the report of the Royal Commission on Coal to have been :—

	TONS.	TONS.
NORTHUMBERLAND—		
In the Tyne district	3,148,096,839	
Mountain limestone district	665,180,007	
		3,813,276,846
DURHAM—		
Under land, and for 3½ miles out to sea	4,723,363,390	
Under the sea beyond 3½ miles, but considered obtainable	1,500,000,000	
		6,223,363,390
Total for Northumberland and Durham		10,036,640,236

The total in the ascertained coal-fields of the United Kingdom is estimated at	90,207,000,000
Probably existing under the permian new red sandstone at workable depths	56,273,000,000
Total for the whole kingdom ...	146,480,000,000

The following estimate of the number of men employed at the collieries in the two counties, and of the gross amount of wages earned by them in 1873, is compiled from reliable data :—

COUNTY.	Underground.		Men engaged above ground.	Amount of Wages.
	Hewers.	Other men.		
Northumberland......	11,000 ...	9,800 ...	4,500 ...	£2,100,000
Durham	24,000 ...	25,400 ...	16,000 ...	5,380,000
Totals	35,000	35,200	20,500	£7,480,000

The annexed diagram shows the prices, free on board ship, of Brancepeth coke, of West Hartley steam coal, of New Pelton gas coal, and of Harton Wallsend household coals, during the last twenty-five years. The coals named represent the best qualities of each description.

Miners' Relief Fund.—In connection with the coal trade some account of the Northumberland and Durham Miners' Permanent Relief Fund may not be inappropriate. This useful and important institution has now been in operation for twelve years, and has been successful in accomplishing the object of its establishment. After many ineffectual attempts to found a society, which should afford relief to the widows and children of men killed in the individual accidents that so frequently occur in collieries, and which do not come prominently before the public, the present institution was established, in 1862. At first its progress was slow, but of

1874.
55
54
53
52
51
50
Shillings per Ton.
5

late years it has been more appreciated; and, at the end of June, 1874, there were 40,000 members, and branches were established at 260 collieries.

The weekly contribution required from the men is 3d., and from boys under eighteen years of age 1½d. The coal owners add 20 per cent. to the aggregate of the miners' contributions at their several collieries. The benefits the society affords are—£5 to a widow, as funeral money, and 5s. per week for herself as long as she remains a widow; 2s. per week for each child until they are twelve years old, in the case of boys, and fourteen years in that of girls. The benefits to members suffering from accidents are 6s. per week for twenty-six weeks, and 8s. per week subsequently, so long as the disablement lasts. Members superannuated at the age of sixty years, or when totally unable to work, receive 6s. a week; it is now proposed to enlarge the operations of the society in this respect.

At the present time the society supports 240 widows and 440 orphans, together with 130 disabled miners, who have been so seriously injured as to be unable to resume work. During the year ending June, 1874, 4,000 persons suffered from accidents of a temporary nature. From the commencement of the society there have been fatal accidents to 560 members. The society has done much to comfort many widows and children who have been bereaved, and many old men who have toiled hard through life. It has distributed £50,000 in relief, and has a balance of over £23,000. Its objects are good, its benefits daily seen, and it commends itself to the support and good wishes of miners, mine owners, and the general public.

THE IRON TRADE.

Until a few years ago most of the smelting furnaces in this district depended on the somewhat limited and uncertain productions of ore obtained from the coal measures. This source of supply has, however, been generally abandoned, and the ten blast furnaces at present existing on the banks of the Tyne draw their supplies either from the Cleveland district or from abroad.

In the manufactured iron trade there were, in 1873, 308 puddling furnaces in the works on the Tyne, and 75 mill furnaces.

Steel.—In 1863, the value of the steel made on the Tyne was estimated at £100,000. Since then the quantity produced has considerably increased.

THE ENGINEERING TRADE.

The work turned out of the Tyne engineering establishments is of so complex a character, embracing, as it does, marine, locomotive, and standing engines, hydraulic machinery, ordnance, bridges, lighthouses, &c., that it is exceeding difficult to illustrate its extent accurately by statistics; this is rendered an impossibility by the indisposition of some manufacturers to give information.

This difficulty does not, however, beset the locomotive branch of the trade. In 1863 it was stated that up to that time the Newcastle makers had turned out 2,400 locomotives, valued at £4,500,000. Returns furnished by the manufacturers show, that, up to the present time, the total number manufactured has been 3,287; allowing for the recent increased cost of production, the gross value may be set at £6,300,000.

There are few countries that have not in the promotion of their industrial development sought and found a helping hand in the engineering workshops of the Tyne. The traveller in Egypt and India will find the rivers spanned by railway bridges; the mariner will meet with lighthouses in the Red Sea and Indian Ocean, alike the production of our engineering establishments; and whilst the achievements of the trade in the paths of peace are thus, and in many other ways, amply exemplified, numerous nationalities depend more or less on Armstrong ordnance for their defence.

THE SHIPBUILDING TRADE.

The Tyne has long been celebrated as a shipbuilding river. Defoe, in 1734, states that "they build ships here to perfection, I mean as to strength, firmness, and to bear the sea." This observation applied, of course, to the building of wooden ships, an industry that has been practically superseded by iron shipbuilding. The "Prince Albert," the first iron vessel built on the Tyne, was launched on the 23rd September, 1842.

The increasing competition of the railways in supplying coal to London led Mr. C. M. Palmer, M.P., about the year

1851 to design and build the s.s. "John Bowes" for the purpose of carrying coals direct from the Tyne to the Thames. Since then, the history of the iron shipbuilding trade has been one of progressive development. The gross tonnage of vessels built in 1862 was 32,175 tons ; in 1873 this figure had risen to 87,913 tons.

The following return, shewing the net or register tonnage of vessels built on the Tyne in 1873, contains some particulars as to their construction and class :—

	No.	Tons.
Iron Steam vessels above 50 tons... ...	65	46,662
Do. Do. built on foreign account	22	15,859
Iron Steam vessels under 50 tons... ...	3	63
Iron Sailing vessels above 50 tons ...	2	2,013
Iron Sailing vessels under 50 tons ...	Nil.	Nil.
Wooden Steamers above 50 tons	1	90
Do. Do. below 50 tons	12	246
Wooden Sailing vessels	Nil.	Nil.
Total	105	64,933

It is estimated that upwards of 40,000 tons of iron were used, and that about 7,000 men and boys, earning £400,000, were engaged in the construction of these vessels.

As illustrative of the capabilities of the Tyne shipbuilding establishments it may be mentioned that H.M. iron-plated vessels, "Defence," "Swiftsure," "Triumph," and "Cerberus," the East India troop-ship "Jumna," the telegraph ships "Faraday" and "Hooper" (two of the largest vessels afloat), besides many of the Ocean liners trading between the United Kingdom and North and South America, have been built on the Tyne.

An important branch of business connected with shipbuilding on the Tyne is the repairing and altering of iron vessels. Increased facilities for this purpose have, within late years, been afforded by several firms—plant capable of dealing with vessels of the largest class, and embracing all modern appliances, having been laid down.

CHAIN AND ANCHOR TRADE.

The manufacture of chains and anchors is an important branch of the iron industry on the banks of the Tyne. In 1873, the quantity manufactured was :—

Chains	7,163 tons.
Anchors	2.023 „

In connection with this trade, reference may be made to the Lloyd's public chain and anchor testing works. They were established at Walker, in 1860, and subsequently licensed by the Board of Trade. The chain-testing machine is capable of testing 150 tons, and the anchor machine 100 tons; the breaking machine can exercise a strain equal to 250 tons. The weight of chains and anchors tested in 1873 was :—

	Tons.
Chains	2,801
Anchors	741
Total	3,542

LEAD MINING AND MANUFACTURES.

Lead mining has been carried on in the south-west portion of Northumberland, and the adjoining portions of the counties of Cumberland and Durham, from the earliest historic periods. The quantities of ore produced in the counties of Northumberland and Durham during late years has averaged about 20,000 tons per annum. The production for the years 1862 and 1872 was:—

	Lead Ore—Tons.	Lead—Tons.	Silver—Ounces.
1862	21,177	16,454	82,854
1872	19.106	14,399	72,175

Works for the manufacturing of lead, naturally promoted by the proximity of this lead-producing district, were established on the banks of the Tyne about the latter part of last century. This industry owes its more recent development to the importation of foreign leads, at first entirely from Spain, but, during late years, from Greece also. The following table shows the increasing importance of this branch of the trade since its commencement thirty years ago.

Annual importation of foreign lead into the Tyne :—

Years.	Tons.	Years.	Tons.
1844	213	1859	9,060
1845	1,453	1860	9,373
1846	3,939	1861	12,284
1847	2,276	1862	12,459
1848	1,697	1863	12,140
1849	3,958	1864	13,498
1850	7,287	1865	18,956
1851	11,915	1866	19,324
1852	7,317	1867	28,048
1853	7,421	1868	31,479
1854	6,534	1869	31,560
1855	3,723	1870	31,857
1856	3,391	1871	40,363
1857	4,877	1872	28,482
1858	4,871	1873	29,330

This foreign lead, as imported, is unrefined, and contains a considerable quantity of silver. It is here refined, desilverised, and, to a large extent, manufactured into the articles named below. The quantity of silver extracted in 1873 is estimated at 1,500,000 ounces, the value of which may be roughly stated at £400,000. The quantities of manufactured articles, other than pig lead, were estimated as follows for the years 1862 and 1873:—

	1862. Tons.	1873. Tons.
White Lead and Paint	7,500	13,000
Red Lead	4,500	7,000
Litharge	800	1,000
Sheet Lead	4,500	8,000
Lead Pipes	1,500	2,500
Shot	750	1,000

The quantity of white oxychloride manufactured in 1873 was 825 tons.

THE CHEMICAL TRADE.

During the latter part of the last century and the beginning of this, the chemical trade in this district was struggling for an existence. These early struggles were associated with the names of Losh, Doubleday, and Dundonald. It was not, however, until after the Peace that Mr. Losh, being in France, learnt Leblanc's process for making soda, and introduced it at the works at Walker. To this process, and its off-shoots, the whole of the chemical trade of this district, with one or two exceptions, is confined.

The following description of the process has been drawn up by Mr. John Pattinson, analytical chemist.

The first step in all the soda manufactories on the Tyne is the production of sulphuric acid. For this purpose sulphur ore (iron pyrites) is burnt in close kilns, and the sulphurous acid thus formed is led, together with vapour of nitric acid, steam, and common air, into large leaden chambers, where, by the mutual reaction of the gases, sulphuric acid is formed, and collected in the bottom of the chambers. When cupreous iron pyrites is used as a source of sulphur (as is the case in many works), the residue remaining after the sulphur has been burnt off is treated for the extraction of copper, and an oxide of iron ("purple ore") is ultimately left, which is largely used in iron works.

The sulphuric acid formed in the leaden chambers is employed to decompose common salt in order to produce sulphate of soda. The sulphuric acid and common salt are heated together in large iron pans. During this process hydrochloric acid is evolved, and is usually led into the large black stonework condensers which form conspicuous objects in all soda works, where it is condensed by being brought into contact with water, and liquid hydrochloric acid is produced. In most cases this acid is heated in stone vessels with peroxide of manganese, thus forming chlorine gas. This gas is conveyed into chambers containing slaked lime, which combines with it, producing what is known as chloride of lime or bleaching powder. In some of the manufactories Mr. Deacon's recently invented process of forming chlorine is in operation, by which the use of peroxide of manganese is dispensed with, the hydrochloric acid, together with common air, being led direct from the salt-decomposing pan, through heating stoves, into heated receptacles filled with marbles or pieces of brick or earthenware saturated with sulphate of copper. By this process the hydrochloric acid is "dissociated," the hydrogen combining with the oxygen of the air to form water, and the chlorine passing on to the slaked lime chambers after being freed from all moisture and undecomposed acid.

The decomposition of the common salt by the sulphuric acid referred to above, is completely effected in fire brick furnaces, into which the mixture is raked from the decomposing pan.

The sulphate of soda thus formed is converted into carbonate of soda by what is known as the Leblanc process, at present universally followed on the Tyne. In this process sulphate of soda, chalk, and coal are heated together in a furnace, thereby forming carbonate of soda and sulphide of calcium, or "soda waste." The carbonate of soda is dissolved by warm water, and thus separated from the soda waste, which is insoluble in water. The solution of carbonate of soda is evaporated to dryness with a little sawdust, and heated to dull redness to destroy some of the impurities in the substance, and thus is produced the unrefined "soda ash" of commerce. In order to form "refined white alkali" the soda ash is re-dissolved in water, the solution allowed to stand to separate some insoluble impurities, and then again evaporated and furnaced.

If crystals of soda are required the soda ash is dissolved in hot water, and such a concentrated solution formed that, on being run into large iron pans to cool, crystals of carbonate of soda are deposited—hot water being able to dissolve much more carbonate of soda than cold water.

In order to form bicarbonate of soda, crystals of soda are subjected to the action of carbonic acid until an extra equivalent of this gas is absorbed. The substance is then dried at a low temperature and ground to fine powder. The carbonic acid is obtained by the action of hydrochloric acid upon chalk.

There are various modifications in the details of the above processes carried on in many manufactories, but in the main the above is a fair outline of the "alkali" manufacture as at present conducted on the Tyne.

The following comparative statement gives the trade statistics for 1862 and 1873.

RAW MATERIALS USED.

	1862.	1873.
	Tons.	Tons.
Coals	323,000	711,800
Coke	...	3,200
Salt	90,000	187,850
Chalk	144,000	282,580
Cliff	14,000	51,080
Pyrites, Cupreous	72,800	99,550
Do. Non do.		27,640
Manganese	11,400	11,020
Sulphate of Soda	...	15,000
Nitrate of Soda	2,500	3,380
Staves and Headings (superficial feet)	...	23,359,000

MANUFACTURED ARTICLES PRODUCED.

	1862.	VALUE.	1873.	VALUE.
	Tons.	£	Tons.	£
Soda Crystals	51,300	243,675	97,440	549,697
Soda-Ash (Alkali) ...	43,500	369,750	97,838	1,010,992
Bicarbonate of Soda ...	7,450	89,400	9,300	153,450
Caustic Soda	580	10,440	2,750	57,750
Bleaching Powder ...	11,200	100,800	24,970	270,300
Hyposulphate of Soda	400	10,000	400	6,400
Carbonate of Magnesia	250	...	180	...
Calcined do.	...	...	50	...
Totals	114,680	824,065	222,928	2,048,589

HANDS EMPLOYED.

Men	8,813
Boys	649
	9,462

Gross amount of Wages paid during the year, £569,600.

COPPER.

The production of copper is new to this district, and may be considered as an off-shoot of the chemical trade. Indeed it may, not incorrectly, be described as a branch of that industry, for the mode of extracting the copper carried on here is, as contrasted with igneous smelting, more a chemical process than a metallurgical operation.

The trade is practically confined to the extraction of copper from the residual cinder of cupreous pyrites after the sulphur has been burnt out in the chemical works. These cinders, containing the copper in an insoluble state, are furnaced with salt, and the copper rendered soluble; this being washed out, the cupreous solution brought into contact with scrap iron, and metallic copper precipitated; requiring only once melting previous to refining and being rendered marketable. The quantity of cinder treated in the works on the Tyne in 1873 was 126,000 tons, and the amount of copper produced (including precipitate, sold as such but estimated as copper) was 3,700 tons, to which may be added about 350 tons produced by ordinary smelting.

FIRE-CLAY GOODS.

The manufacture of fire-clay goods is of somewhat recent origin. The clay, from which they are made, is found in layers interspersed throughout the coal measures of this district. They vary in quality, enabling the manufacturers to prepare judicious mixtures suitable for particular purposes. This facility is enjoyed to a greater extent by the northern fire-clay manufacturers than by those in any other part of the kingdom. The number of bricks manufactured in 1838 was about 7,000,000 per annum; the local consumption was then about 2,500,000; the quantity sent to other parts of the United Kingdom was about 3,000,000; and the quantity exported about 1,500,000.

Since that period fire-clay has been used for other purposes—the manufacture of gas retorts, of sanitary pipes, and also for ornamental building purposes.

Statistics of the trade for 1873 :—

Number of bricks made	54,750,000
Number of retorts	7,000
Weight of lumps, quarls, sanitary pipes, &c.	36,500
Number of hands employed	1,050
Amount of wages paid	£54,500
Number of bricks exported	18,602,700

THE CEMENT TRADE.

The oldest cement works in this district, those at present belonging to Messrs. I. C. Johnson and Co., were commenced in 1856. There are now six firms engaged in the manufacture of Portland cement, the quantities of other cements made being trifling. In 1862 the quantities manufactured were :—Portland cement, 10,000 tons; Roman cement, 350 tons.

The following statistics show the condition of the trade in 1873 :—

RAW MATERIALS USED.

Coals and Coke	Tons	40,500
Chalk	„	89,721
Clay	„	19,748
Staves	Superficial feet	2,995,000

MANUFACTURED ARTICLES PRODUCED.

Portland Cement...	55,855 Tons.	Roman Cement ...	300 Tons.

PERSONS EMPLOYED.

Men	523	Women	6
Boys	47	Wages paid ...	£31,979

THE MANUFACTURE OF EARTHENWARE.

The manufacture of earthenware was introduced into this district about the year 1730. The description of earthenware made is that used for household purposes by the middle and working classes. None of the raw materials required in the manufacture are found in the district, but are brought here at reasonable freights as ballast. This circumstance, together with the cheapness of fuel and the facility for export, has considerably encouraged this manufacture.

The following are the statistics of the trade for 1873:—

Coals used	25,650	tons.
Clay	15,080	„
Flint	9,035	„
Stone	1,020	„
Ware made, valued at	£121,000	
Men employed	364	„
Boys „	167	„
Women „	380	„
Wages paid	£35,555	

The value of the brown ware made is estimated at £10,000.

THE PAPER TRADE.

In 1862 the quantity of paper manufactured in the entire counties of Northumberland and Durham, was 3,500 tons of white, and 4,500 tons of brown, valued at £300,000. The coarse materials, old ropes, &c., used for the manufacture of brown paper, were estimated at 5,200 tons; rags, 4,000 tons; Esparto grass, 2,000 tons; bleaching powder, 400 tons; soda ash, 200 tons; and coals, 35,000 tons. The following estimate for 1873, with respect to that portion of the trade which is confined to the Tyne and its affluents only, has been furnished by Mr. W. H. Richardson of the Monkton Paper Mills.

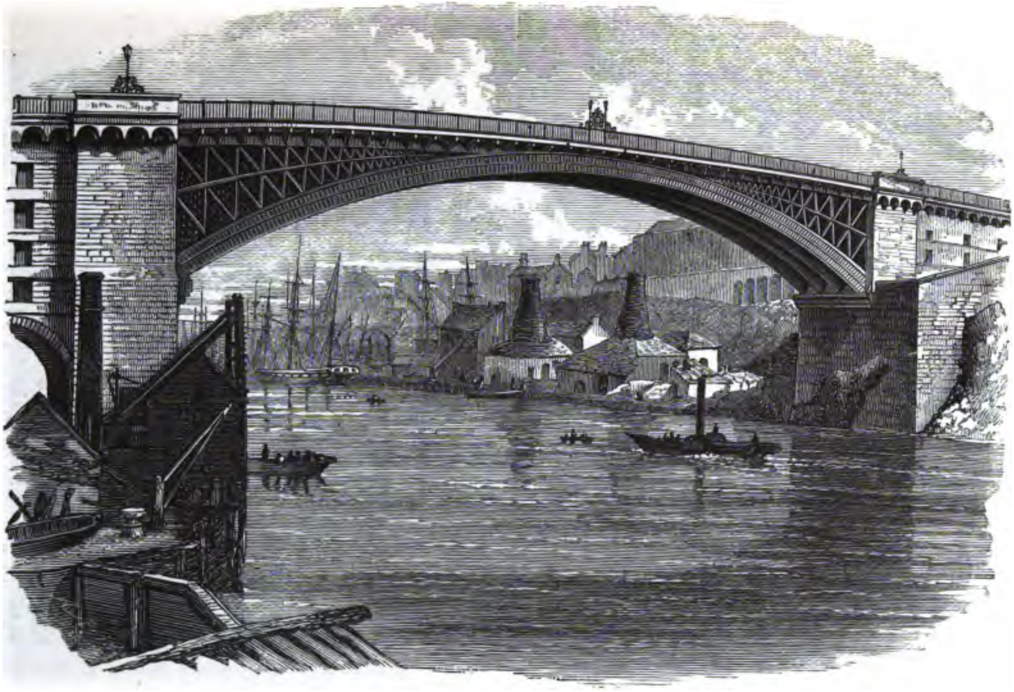
PAPER MADE—1873.	Tons.
Brown	5,300
White	2,500
RAW MATERIALS USED—	
Esparto	2,000
Straw	900
Fine Rags	1,800
Old Rope, Mill Waste, and Coarse Rags	6,500

The introduction of Esparto has had a material effect on the paper trade generally. Vessels returning from Spain to the Tyne with lead and other heavy cargoes, are glad to fill up with this light grass; this has thus become the chief port for the trade. The following table shows the quantities imported:—

Year.	Tons.	Year.	Tons.
1860	871	Brought forward	137,306
1861	2,613	1867	35,559
1862	9,534	1868	55,658
1863	18,328	1869	44,154
1864	30,792	1870	57,206
1865	34,008	1871	65,988
1866	41,160	1872	88,359
		1873	35,996
Carried forward	137,306		
		Total	470,226

NEIGHBOURING PORTS.

It has been thought that some reference to the other large ports of the district would be interesting. To meet this view the following chapters have been contributed, and are arranged according to the geographical position south from the Tyne, of the places to which they refer.



Sunderland Bridge.

SUNDERLAND.

THE town of Sunderland, situated at the mouth of the river Wear, is about 14 miles south-east of Newcastle. It embraces the three parishes of Sunderland, Bishopwearmouth, and Monkwearmouth, the two former being on the south side of the river, and the latter on the north. Although Sunderland, as a place of importance, has been of somewhat recent and rapid growth, yet a town or village, with a monastic establishment, existed at Monkwearmouth in the time of the Venerable Bede, and probably dated back into the Saxon era.

The following population returns will show the rapid increase of the borough since the beginning of this century:—

1801	24,998	1861	78,211
1821	31,891	1871	98,242
1841	52,818	1873	103,000

Like all the North-Eastern ports, Sunderland owes its prosperity to the Coal Trade; the returns of coal exported to foreign countries and coastwise are as follows:—

Year.	Tons.	Year.	Tons.
1609	11,648	1850	1,718,427
1710	175,000	1860	2,979,468
1825	1,330,414	1870	3,227,127
1840	1,318,497	1873	2,952,528

The declared value of the exports, exclusive of coal and coke, was as follows :—

1864	£76,551	1871	£209,313
1870	126,627	1872	217,234

During 1873, the number and tonnage of vessels with cargoes inwards and outwards, in the foreign and coasting trades, were :—

Foreign.				Coasting.			
Inwards.		Outwards.		Inwards.		Outwards.	
No.	Tonnage.	No.	Tonnage.	No.	Tonnage.	No.	Tonnage.
1006	213,136	2650	828,621	812	85,320	4627	906,311

In the year 1873, 8,066 vessels, registering 1,889,861 tons, cleared from the port of Sunderland, viz. :—

	Steamers.	Sailing Vessels.	Reg. Tons.
Coasting Trade	1,262	5,346	1,036,853
European	935	2,526	748,846
Beyond Europe	16	194	104,162
Total Trade	2,213	8,066	1,889,861

To accommodate the increasing traffic, Docks on both sides of the river have been formed. The North Dock was opened in the year 1840, and the South Dock in the year 1850. The North Dock has an area of six acres, with 23 feet 3 inches depth of water on the sill in spring tides;

and 16 feet 5 inches at neap tides. The following are the areas of the different portions of the South Dock :—

	A.	R.	P.
Outer Basin Harbour Entrance	2	3	0
Half-tide do. do.	2	2	1
Hudson Dock (North)	18	2	16
Do. (South)	14	1	27
Hendon Dock	11	0	0
Half-tide Basin, South Outlet	1	2	17
Total	50	3	21

The depth of water on the various sills is as follows :—

	Spring Tides.		Neap Tides.	
	Ft.	In.	Ft.	In.
Harbour Entrance to Hudson Dock	20	3	16	5
South Outlet, Inner Gates	22	3	18	5
Do. Outer Gates	24	3	20	5
Hendon Dock	26	3	22	5

The South Dock extends southward from the mouth of the river along the sea shore. The whole area embraced within the dock, and a large portion of land to the eastward of it, has been reclaimed from the sea by these works. These docks, which have done much for the development of the trade of Sunderland, were originally the property of a public company promoted by the late Mr. George Hudson. They now belong to the River Wear Commissioners, who have a capital invested of a million-and-a-half. With the recent additions, they form one of the most extensive ranges of dock accommodation on the east coast, and have the advantage of deep water entrances direct from the sea, facilitating the ingress and egress of vessels. By an Act obtained in the last Session of Parliament the Commissioners have obtained power to add 80 acres to their present docks. Of the 8,066 vessels which cleared from the port of Sunderland during the last year, 4,131, registering 1,099,013 tons, cleared from the South Dock.

Sunderland has always been celebrated as a shipping port. The number of vessels registered as belonging to the port in the year 1873 was 678, representing a tonnage of 206,409. Shipbuilding has for a long period formed one of the principal trades of the port. Formerly, this branch of business was confined to the building of wooden ships; but Sunderland has not been behind other ports in developing the iron shipbuilding trade. The following return is interesting, not only as showing the increase of the trade, but also the gradual increase in the average size of the vessels built :—

	No.	Tons.	Average size. Tons Reg.
1858	110	42,003	381
1863	171	70,040	410
1872	122	131,825	1080½

The amount of tonnage built on the Wear, both of wood and iron, is greater than that of any other river in the kingdom, excepting the Clyde, having amounted last year to 92,811 tons. Many of the largest ships, both steam and sailing, employed by the P. & O., the West India and Pacific, and the large private firms of ship owners, have been built and are at present being built on the

Wear, whilst no less than five war vessels for the English Government are in course of construction.

The abundant supply of cheap fuel, and the facilities for shipment, have led to the establishment of several other classes of manufacture. More particularly may be mentioned the manufacture of black bottles, a larger number being made in Sunderland than in any other town in the kingdom. Window and coloured glass are manufactured to a large extent; also, earthenware, paper, chain cables and anchors, hemp and wire rope. There is also a considerable amount of foundry and engineering work carried out. The following table shows the principal exports and imports other than coal and coke from the year 1867 to 1873 inclusive :—

IMPORTS.

	1867.	1868.	1869.	1870.	1871.	1872.	1873.
Timber	94,046	117,940	74,883	98,411	108,602	126,703	164,287 Loads.
Props	209,769	203,908	135,330	235,696	302,115	262,040	267,053 Dozen.
Iron	8,029	11,069	12,225	23,021	35,930	39,290	22,412 Tons.
Grain	84,541	68,529	100,748	109,873	138,454	117,748	130,924 Qrs.
Chalk, &c.	55,586	54,310	52,155	52,094	94,141	75,079	87,007 Tons.
Flour	1,929	1,402	2,404	3,375	2,593	2,782	3,630 ,,
Sheep	11,794	2,988	8,773	8,622	38,432	3,068	31,446 Head.
Ore	..	..	..	..	36,044	..	25,236 Tons.

EXPORTS.

	1867.	1868.	1869.	1870.	1871.	1872.	1873.
Bottles	16,204	16,173	14,682	13,714	14,202	13,005	14,249 Tons.
Earthenware ..	2,142	1,748	1,595	1,476	1,428	2,344	1,751 Crates.
Lime	51,059	54,384	58,753	49,359	52,113	39,514	29,873 Tons.
Iron	15,631	16,636	23,387	20,494	40,408	36,699	30,743 ,,
Chemicals	..	..	..	8,562	9,468	7,666	4,803 ,,
Patent Fuel ..	..	..	..	..	..	13,905	30,261 ,,
	..	..	..	..	..	..	....

SEAHAM HARBOUR.

Seaham Harbour, a private shipping port, belonging to the Londonderry family, was made by the late Marquis for the purpose of shipping the produce of his extensive coal mines lying within the immediate district. The works consist of two docks, having an area of about five acres, and two tidal basins of about the same extent. They were opened on the 20th July, 1831.

The close proximity of a shipping port, and the ability to obtain an abundant supply of cheap fuel, have led to the establishment of bottle works, chemical works, and blast furnaces. The bottle works established by the late Mr. John Candlish are amongst the largest of the kind in the kingdom. The shipment of coals from the port exceeds 500,000 tons annually, and the value of the chemicals exported in 1873 was about £60,000. The imports consist of timber, pit props, and the raw materials for the iron and chemical works—iron ore, pyrites, &c. The population of the town in 1861 was 6,132, in 1871 7,044.

THE HARTLEPOOLS.

The Newcastle and Gateshead Chamber of Commerce, in submitting a statement of the trade of Newcastle, having offered the neighbouring towns an opportunity of bringing their trades before the Associated Chambers of Commerce, the following reference to Hartlepool is submitted by the local Chamber :—

Hartlepool is situated on the northern confines of the bay, into which the River Tees flows. The ancient town, or "Old Hartlepool," received its first charter from King John; the new town, or "West Hartlepool" is of modern growth, and cannot boast of an existence of more than 27 years.

The formation of docks and warehouses has led to the extension of the population, which now numbers in the two towns about 45,000 souls—an active, thriving, and pushing commercial community. Thus Hartlepool may now justly claim to be one of our great commercial ports. Its early development is due to the energy, forethought, and care of Mr. Ralph Ward-Jackson, who may properly be deemed its founder. Subsequently, the original local railways and docks were absorbed into the North Eastern Railway system; thus giving so tangible a basis to the trade that it must of necessity exhibit a progressive development.

The port of the Hartlepools consists, apart from the old natural harbour, of four docks, with a total area of 50 acres, having a depth of 21½ feet of water on the sills at spring tides. There is besides a new dock, 8 acres in extent, in course of construction; the timber ponds in use at present cover 73 acres, and the various quays extend over about 20 acres additional. The warehouses in connection with the docks, covering 5½ acres of ground, are unequalled in the North of England for the storage of grain, dry goods, and other merchandise.

Upon the completion of the new docks and channels, the main entrance to the dock system will be by the Hartlepool Harbour channel, where the Port and Harbour Commissioners have undertaken to preserve a minimum depth of 10 feet at low water spring tides. The importance of the trade of the port during the last few years is shown by the following statistics:—

The export of coal and coke was, in the year 1870, 806,566 tons; in 1871, 686,365 tons; in 1872, 478,499 tons; and in 1873, 470,996 tons.

The export of merchandise was, in 1870, 105,589 tons; in 1871, 135,460 tons; in 1872, 128,655 tons; and in 1873, 105,214 tons.

The imports were, of timber, in 1870, 243,843 loads; in 1871, 270,901 loads; in 1872, 271,533 loads; and in 1873, 300,205 loads; of cattle, in 1870, 3,097; in 1871, 4,848; in 1872, 3,093; and in 1873, 3,807; of sheep and pigs, in 1870, 30,460; in 1871, 34,387; in 1872, 13,060; and in 1873, 30,578; of grain, in

1870, 230,356 qrs.; in 1871, 167,134 qrs.; in 1872, 350,683 qrs.; and in 1873, 315,832 qrs.; of general goods, in 1870, 39,650 tons; in 1871, 44,135 tons; in 1872, 63,886 tons; and in 1873, 50,606 tons.

The number of steam vessels registered at the Hartlepools on the first of January, 1874, was 90, having a total of 51,906 tons; and of sailing vessels 107, having a total of 24,890 tons.

The diminution in the export of coal has arisen through the greater local consumption by ironworks, and the lessening of production consequent on the shortening of hours of labour. It is, however, anticipated that this falling off will only be temporary. The importation of timber and grain has steadily increased, and forming the staple of the Hartlepool imports, will probably continue to do so, as every facility is offered for carrying on these trades.

The exportation of inland manufactured goods, by lines of steamers to various continental ports, is an important element in the local traffic, whilst a large importation of cattle, sheep, and pigs takes place as a return trade.

As a shipowning port Hartlepool is not behind hand. Upwards of 90 steamships of recent construction, trading to all parts of the world, and 107 sailing vessels of various sizes being registered as belonging the port.

Iron shipbuilding is carried on very successfully by three firms, who, collectively, have built during recent years (including those in course of construction) 151 vessels, chiefly steamers, of an aggregate tonnage of 145,000 tons. These establishments give employment to upwards of 2,000 hands. In connection with two of them there are three graving docks, 360 feet long and 50 feet in breadth.

The manufacture of iron plates is also carried on at two well-known establishments, which together turn out an average of 22,000 tons annually. In addition, one of them manufactures an average of 42,000 tons of rails, and possesses blast furnaces capable of producing 60,000 tons of pig iron annually. These establishments give employment to 3,000 men and boys. The construction of marine engines is also extensively carried on by a firm of long-standing, who have turned out, of all sorts, 540 engines, and now employ 1,500 hands.

In addition to these important industrial interests, other branches of trade are well represented. They consist of saw mills, cement works, steel, glass, bottle, and railway waggon works.

The development of the Hartlepools during the past twenty years has not been slow. Their natural capabilities for extension are very great; and when the proposed direct railway communication with the great iron centre of Middlesbrough, by a tunnel under the Tees, and the further expansion of the dock system (now in progress) are completed, the port of the Hartlepools will assume a more important position as one of the commercial centres of the North of England.

MIDDLESBROUGH.

The population of Middlesbrough has increased very rapidly during the last few years, and is now considerably above 50,000, but there are numerous manufacturing suburbs and places in the vicinity which bring up the total population of the immediate district to nearly 100,000. The staple industry of the locality is the iron manufacture. Within the boundaries of the port of Middlesbrough the total number of blast furnaces was, last year, 74, and 11 are now building. The make of pig iron in 1873 was 1,162,898 tons. The total production of the whole of the North of England was 1,999,491 tons; hence, it will be seen that the greater part of the iron produced in the North country is made in the port of Middlesbrough. Out of a total of about 2,100 puddling furnaces in the northern district, for the conversion of pig into finished iron, nearly one-fourth are situated in the neighbourhood of Middlesbrough. The river Tees is lined with quays and wharves, where the principal portion of the shipping trade is carried on. Great improvements have of late years been made in the navigation of the river, and are still being carried on under the supervision of the Tees Conservancy Commissioners. In addition to the iron trade the port contains engineering establishments, iron foundries, nut and bolt works, wire works, potteries, chemical works, and tube works. The importation of timber has now become an important trade.

The Dock at Middlesbrough has been much enlarged lately, and a comparison between the old works and those now existing may not be uninteresting. The old dock was constructed in 1842, by a private company, and contained a water area of between five and six acres, with an entrance 30 feet wide, having a depth of 18 feet above the sill at high water spring tides. Three of the four sides were slopes, while on the fourth were erected ten coal shipping staiths, the chief and indeed the only trade being at that time the export of coal. This trade has since been transferred to the Tyne, Sunderland, and the Hartlepools; and the export of fuel is now comparatively small. In 1869 the North Eastern Railway Company, who had acquired the docks, commenced to enlarge them. They have constructed a new and slightly deeper entrance 55 feet wide, a total length of stone quay of 1,626 feet, and have furnished an increased water area of about five acres. With respect to the appliances for coaling, loading, and discharging vessels, there are three coal shipping staiths, constructed specially to carry trucks (instead of the old chaldron wagons), and on an average twenty trucks of coal or coke, equal to about 180 tons, can be shipped per hour at each staith. There are eleven steam cranes, nine travelling and two fixed, the former of which are capable of lifting five tons each, in addition to which a pair of shear legs, which will raise fifty tons, are being erected.

During the year 1873 there were 2,533 vessels cleared from the port, carrying 457,145 tons of iron, coal, &c.

The number of vessels registered at the port, at Dec. 31st, last year, was 99, of a total tonnage of 16,336 tons.

The number of vessels built at Middlesbrough last year was twelve, the tonnage of which was 13,869 tons, ten of these being iron screw steamers, the total horse-power of the engines being 1,370.

The export of pig iron from Middlesbrough during the year 1873, amounted to 182,565 tons coastwise, and 339,916 tons foreign—quantities slightly larger than those of 1872. Of finished iron, last year 190,915 tons were shipped, as compared with 170,172 tons in 1872. Coal gave last year 13,706 tons coastwise and 28,020 foreign, and coke 2020 tons coastwise and 27,401 tons foreign—quantities considerably smaller than those for 1872.

The declared values of the shipments of general goods during the last four years have been as under :—

1870	£1,252,250
1871	1,593,347
1872	2,670,148
1873	3,267,483

NEWCASTLE-UPON-TYNE : A. REID, PRINTING COURT BUILDINGS, AKENSIDE HILL.

A. REID, PUBLISHER, PRINTER, &c.,

PRINTING COURT BUILDINGS, AKENSIDE HILL, NEWCASTLE.

ILLUSTRATED EDITION.

Crown 8*vo., Cloth, Price* 5*s.; Large Paper,* 10*s.; Extra Bound, Morocco Gilt,* 12*s.* 6*d.; Large Paper,* 25*s.*

REID'S

HAND-BOOK TO NEWCASTLE-UPON-TYNE

AND NEIGHBOURHOOD,

By J. COLLINGWOOD BRUCE, LL.D., F.S.A.,

CONTAINING A CAREFULLY WRITTEN HISTORY OF

ANCIENT AND MODERN NEWCASTLE,

Illustrated with numerous Engravings of the most interesting Parts of the Town, and of the New Buildings; a Portrait of the late R. Grainger, Esq., from a Photograph by Sarony; and a Miniature Map of the Borough of Newcastle-upon-Tyne, showing the position of the Public Buildings, &c.; a carefully executed Map of the River Tyne, from Blaydon to Tynemouth; and a Geological Map of the Counties of Northumberland, Durham, and North Yorkshire, coloured by Professor Philips, F.R.S., specially prepared with reference to the Geological Formations of the District, Position of the various Collieries, Blast Furnaces, &c.

LONDON: LONGMANS, GREEN, & CO.

NEWCASTLE-UPON-TYNE: A. REID, PRINTING COURT BUILDINGS.

OPINIONS OF THE PRESS.

(From THE SATURDAY REVIEW, May 21, 1864.)

At last we have found a good Guide Book, copious and trustworthy in its matter, and irreproachable in its manner and style. We only wish that some other towns were as fortunate in this respect as the Northumbrian capital. Here we see the advantage of entrusting a work of this kind to a competent editor. Dr. Bruce is not only a first-rate antiquary and topographer, but he writes as a gentleman and a scholar. This unpretending Hand Book is thoroughly acceptable. It tells a stranger all that he need wish to know about Newcastle-upon-Tyne at a first visit; and most residents will be quite satisfied with its succinct, judicious, and modestly-expressed information. It is a volume which no one need be ashamed to place on his shelves, and which may be opened at any time with the conviction that it will be found amusing and instructive, without any of that bad taste and inflation of language that are the besetting sins of books of this kind. This excellent description of the thriving and picturesque city on the Tyne seems to deserve a warm welcome at our hands.

A. REID, PUBLISHER, PRINTER, &c.,
PRINTING COURT BUILDINGS, AKENSIDE HILL, NEWCASTLE.

SECOND EDITION,
PRICE 15s.,

BEAUTIFULLY ILLUSTRATED with Maps of the Tyne, the Wear, and the Tees; Geological Map of the North of England and South of Scotland, in Colours; Sections of the Coal-fields; Coal Purifying Apparatus; Fire Clay Machinery; Chemical Apparatus, and various Diagrams on Wood; Map of the Railways, in Colours; the "Rocket" Engine; fine Illustrations of the Armstrong Gun and Palmer's "Defence" Man-of-War, &c.

THE INDUSTRIAL RESOURCES
OF THE
THREE NORTHERN RIVERS,
THE TYNE, WEAR, AND TEES,

From the ORIGINAL MANUSCRIPTS,
Including the Reports of the Committee of Local Industry, together with Notes and Appendices.

EDITED BY
SIR W. G. ARMSTRONG, C.B., LL.D., F.R.S.
I. LOWTHIAN BELL, ESQ.
JOHN TAYLOR, ESQ.
DR. RICHARDSON.

LONDON: LONGMANS, GREEN, & CO.
NEWCASTLE-ON-TYNE: A. REID, PRINTING COURT BUILDINGS.

TRANSACTIONS
OF THE
NORTH OF ENGLAND INSTITUTE
OF
MINING AND MECHANICAL ENGINEERS.

Vols. 1 to 22, from 1852 to 1873, half calf (*numerous Illustrations*); 21s. each.
NEWCASTLE-ON-TYNE: A. REID, PRINTING COURT BUILDINGS.

A. REID, PUBLISHER, PRINTER, &c.,
PRINTING COURT BUILDINGS, AKENSIDE HILL, NEWCASTLE.

JUST PUBLISHED,

CROWN 8vo., PAPER COVER, PRICE 2s.,

"SHOOTING FAST:"

OR,

MALTA AND THE COAL TRADE.

By THEO. WOOD BUNNING.

LONDON: W. H. SMITH & SON.
NEWCASTLE-ON-TYNE: A. REID, PRINTING COURT BUILDINGS.

In Four Parts, Folio, beautifully Illustrated, 21s. *Each.*

THE

LAPIDARIUM SEPTENTRIONALE.

BY

J. COLLINGWOOD BRUCE, LL.D., F.S.A.

PUBLISHED FOR THE SOCIETY OF ANTIQUARIES OF NEWCASTLE-UPON-TYNE,
BY W. DODD, NEW BRIDGE STREET.

A. REID, PUBLISHER, PRINTER, &c.,
PRINTING COURT BUILDINGS, AKENSIDE HILL, NEWCASTLE.

Third Thousand.—Price 2s., by Post 2s. 1d.

THE VENTILATION OF COAL MINES:

A PRACTICAL TREATISE

ON THE

GASES MET WITH IN COAL MINES

AND THE

GENERAL PRINCIPLES OF VENTILATION.

BY THE

LATE J. J. ATKINSON, ESQ.,

GOVERNMENT INSPECTOR OF COAL MINES FOR THE COUNTY OF DURHAM.

Starting with elementary principles and definitions, and with the aid of the most simple illustrations, the author has worked out the laws which govern the ventilation of our mines in a manner so clear and so convincing as to bring the subjects, hitherto deemed so difficult, within the easy comprehension of every educated miner. It is well known that the late J. J. Atkinson was an authority upon the most complicated questions of ventilation, the larger and more extended knowledge of this subject being due principally to his teaching, and, therefore, no one was better able to undertake such a work.

No further recommendation is needed of the merits of the treatise, but it may add to the success of the generous object which the author had in writing it, if it is known that of his many works for the advancement of the art of mining, this is the only one which can be made available for the benefit of his widow and family, from whom he has so suddenly been removed. The proceeds will go to the augmentation of the "Atkinson Memorial Fund."

LONDON: LONGMANS, GREEN, & CO.
NEWCASTLE-UPON-TYNE: A. REID, PRINTING COURT BUILDINGS.